P4 PRODUCTION

FINAL

QUALITY ASSURANCE PROJECT PLAN ADDENDUM – REVISION 2

Program Quality Assurance Plan

Prepared by

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2353 130th Avenue N.E., Suite 200
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May 2009

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PROGRAM QUALITY ASSURANCE PLAN

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P4 Production, LLC

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ACRONYMS AND ABBREVIATIONS

amu	atomic mass unit
CCB	continuing calibration blank
CCV	continuing calibration verification
CVAA	cold vapor atomic absorption
DQO	data quality objective
EE/CA	Engineering Evaluation/Cost Analysis
EDD	electronic data deliverable
EDF	Electronic Deliverable Format
FSP	field sampling plan
IC	ion chromatography
ICAL	initial calibration
ICB	initial calibration blank
ICP	inductively coupled plasma
ICPMS	inductively coupled plasma-mass spectrometer
ICV	initial calibration verification
LDC	Laboratory Data Consultants, Inc.
LLCCS	low-level calibration check standard
MDC	minimum detectable concentration
MDL	method detection limit
mg/L	milligrams per liter
MS	matrix spike
MSD	matrix spike duplicate
ND	not detected
NIST	National Institute of Standards and Technology
P4 Production	P4 Production, LLC
PgmQAP	Program Quality Assurance Plan
QA	quality assurance
QAPP	Quality Assurance Project Plan
QC	quality control
RL	reporting limit
RPD	relative percent difference
SAP	Sampling and Analysis Plan
USEPA	United States Environmental Protection Agency
USEPA CLP	United States Environmental Protection Agency Contract Laboratory Program
USEPA NFG	United States Environmental Protection Agency National Functional Guidelines

1.0 PROGRAM MANAGEMENT

MWH has prepared this Quality Assurance Project Plan (QAPP) Addendum for P4 Production, LLC (P4 Production) to addend the existing, approved Program Quality Assurance Plan (PgmQAP). The QAPP Addendum is being submitted as a deliverable for work under the Consent Order/Administrative Order on Consent for the Performance of Site Investigations and Engineering Evaluations/Cost Analysis (EE/CAs) at P4 Production Phosphate Mine Sites in Southeastern Idaho (08/20/03), EPA Docket No. CERCLA-10-2003-0117.

The PgmQAP is one component of the Sampling and Analysis Plan (SAP) for the Comprehensive Site Investigation for the Southeast Idaho Mine-Specific Selenium Program (MWH, 2004). This Addendum is required to document changes and updates to the analytical program and field quality control (QC) sampling requirements. This QAPP Addendum follows the outline of the PgmQAP and addresses only changes and updates to the existing PgmQAP. As such, only sections requiring changes or updates are addressed in this QAPP Addendum.

For future sampling events, project-specific or sampling event-specific Data Quality Objectives (DQOs) may require stand-alone QAPPs or additional QAPP addenda.

1.2 PROGRAM ORGANIZATION

The laboratory will be identified in project-specific or sampling event-specific SAP or QAPP Addendum.

Third (3rd) party data validation will be used for all sampling programs. Laboratory Data Consultants, Inc. (LDC), located in Carlsbad, California has been approved by the Agencies/Tribes to validate samples collected in support of the comprehensive investigation and monitoring program (Rowe, 2008a and 2008b).

Collection of Quality Assurance (QA) split samples and use of a QA laboratory have been discontinued.

Changes to the overall organization are as follows:

- **P4 Production Program Manager:** Barry Koch replaces Bob Geddes as P4 Production's Program Manager.
- **Vice President in Charge:** Howard Lee replaces Donald Caldwell as MWH's Vice President in Charge.
- **Program Manager:** Cary Foulk replaces Bill Wright as MWH's Program Manager.
- **Mine-Specific Project Managers:** This organizational role has been removed, and the responsibilities have been assumed by the Program Manager.
- **Quality Manager:** Ruth Siegmund replaces Glenn Mills as Quality Manager.
- **Program Safety Manager:** Colin Duffy replaces Paul Stenhouse as Program Safety Manager.
- **Field Team Leader:** Dean Brame replaces Paul Stenhouse as Field Team Leader.
- **Analytical Task Manager:** Ruth Siegmund replaces Mark Rettman as the Analytical Task Manager. Additionally, Suzanne Anderson will manage the day-to-day activities with the laboratory, such as coordination of sample-collection supplies for individual sampling events; being the main point-of-contact for resolution of sample-receipt discrepancies; and tracking samples from collection to receipt of data validation report.

1.4.2 Data Quality Objectives

The DQO process will be implemented on a task specific basis, prior to the start of each task. The DQOs will provide for additional specifications as needed for the task.

1.4.4.2 Accuracy

The amounts spiked into matrix spike samples may be adjusted to provide more meaningful results. For example, the spike concentration for a given target analyte may be adjusted to a level that is at or near a cleanup or risk based concentration for samples collected during surface water and groundwater monitoring. These matrix spike results will be more meaningful relative to the task-specific DQOs, and the appropriateness of the spike concentration will be incorporated into the review and data validation process.

1.6.3 COC Records

Example chain-of-custody form on Figure 1-2 replaces ACZ's chain-of-custody form.

1.6.4 Analytical Laboratory Records

This section has been updated to provide a more detailed description of the laboratory's hard-copy data deliverable.

The hard-copy deliverable ("data package" or "report") will be issued (i.e., published or printed) in one of two formats: a Level 3 or Level 4 data package deliverable. For approximately 90 percent of samples collected, hard-copy reports will be issued with summary data (or "Level 3" package, as defined in Section 1.6.4.1), and the remaining hard-copy reports will be issued with summary data and back-up raw instrument data (or "Level 4" package, as defined in Section 1.6.4.2). Level 4 data packages will be provided for all samples (all data packages) in scanned (pdf) format. At the end of the project sample analysis, MWH will request the laboratory to print one out of five data packages as a hard-copy Level 4 deliverable to ensure there are sufficient and representative packages for selection of 10 percent of samples for a United States Environmental Protection Agency's (USEPA or EPA) Stage 4 Validation (USEPA, 2009). The 10 percent of samples will be randomly selected from those printed Level 4 data packages. The scanned Level 4 packages containing raw data for 100 percent of samples are required for the project record and may be needed if problems are encountered during review of the Level 3 packages (see Section 2.7.2).

The hard-copy report will be paginated and organized with a table of contents. The hard-copy deliverable will contain a cross reference that correlates the client or field identification as provided on the chain-of-custody document with the laboratory's sample identification. Results should be presented on a form equivalent to the USEPA Contract Laboratory Program (CLP) "Form 1." Results from QC samples associated with each distinct analytical method are to be presented all together on QC summary sheets for ease of review. A Case Narrative will be provided for each analytical method. The Case Narrative discusses any problem related to sample-receipt, corrective action taken by the laboratory, QC outliers or other problems, method deviations, and/or clarifications or anomalies observed by the laboratory.

Sample Results (CLP "Form 1") – This form contains all required data for field samples. The Form 1 (or equivalent) will provide the following information:

- Field sample identification
- Laboratory sample identification

- Sample result(s) for metals and general chemistry parameters will be reported with appropriate units, method detection limit, and reporting limit. Concentrations equal to or greater than the method detection limit (MDL) must be reported. Concentrations between the MDL and reporting limit will be flagged as estimated ("J" flagged). Parameters that are not detected or not present at concentrations equal to or greater than the MDL are flagged as "U" and interpreted to be not detected at a value equal to or greater than the MDL. Any non-detected value ("U" flagged) will be reported with its reporting limit and MDL. Do not report "not detected" (or "ND").
- Sample result(s) for radiological parameters (gross alpha and beta) will be reported with appropriate units, minimum detectable concentrations (MDCs), and reporting error or uncertainty (2 sigma error). Concentrations equal to or greater than the MDC must be reported. Gross alpha and beta that are not detected or not present at concentrations equal to or greater than the MDC are flagged as "U" and interpreted to be not detected at a value equal to or greater than the MDC. Do not report "not detected" (or "ND").
- Sample collection and receipt dates
- Sample preparation date/time
- Analysis date/time
- Dilution factor
- Preparation batch number or identification
- Analysis batch number or identification
- Sample matrix and instrument
- Percent moisture determination
- For solid-matrix samples, identify basis of reporting (i.e., wet-weight or dry-weight basis)

1.6.4.1 Summary or "Level 3" Data Deliverable Package

All other summary forms need to be present, following the Form 1s, with clear association of the QC batch to each sample (on the CLP Form specified or equivalent):

- Summary of all field sample results (as described above)
- Sample results and preparation blank (Form IA-IN and IB-IN)
- Initial calibration verification (ICV), and continuing calibration verification (CCV) (Form IIA-IN)
- Low-level calibration check standard (LLCSS) (Form IIB-IN)
- Initial calibration blanks (ICB), continuing calibration blank (CCB), and preparation blanks (Form III-IN)
- Inductively coupled plasma (ICP) interference check sample (Form IVA-IN) or inductively coupled plasma-mass spectrometer (ICPMS) interference check sample (Form IVB-IN)
- Matrix spike and matrix spike duplicate (MS/MSD) sample recovery and MS/MSD relative percent difference (RPD) (Form VA-IN)
- Post-digest spike sample recovery (Form VB-IN)

- Laboratory duplicate precision (Form VI-IN)
- Laboratory control sample (LCS) recovery (Form VII-IN)
- ICP and ICPMS serial dilution percent differences (Form VIII-IN)
- MDLs (Form IX-IN)
- ICP interelement correction factors (Forms XA-IN and XB-IN)
- ICP and ICPMS linear ranges (Form XI-IN)
- Preparation log (Form XII-IN)
- Analysis run Log (Form XIII-IN)
- ICPMS tunes (Form XIV-IN)
- ICPMS internal standards relative intensity summary (Form XV-IN)
- Sample log-in sheet (Form DC-1)
- Deliverables inventory sheet (Form DC-2)
- Case narrative
- Chain-of-custody

1.6.4.2 Full Raw Data or "Level 4" Data Deliverable Package

The Full Raw Data Package includes all items specified for the Summary Data Package (Level 3), plus instrument raw data and/or documentation of the following:

- Calibration standards (including source, preparation date)
- Blanks (ICB, CCB, and preparation)
- ICV, CCV standards
- Interference check samples
- Serial dilution samples
- LLCCS
- LCS
- Diluted and undiluted Samples
- Dilution factors
- Sample volumes
- Laboratory duplicates
- Matrix spikes (source, concentration, volume)
- Post-digest spikes (source, concentration, volume)
- Method of standard addition results
- Instrument identification
- Analysis date and time
- Integration time (cold vapor atomic absorption [CVAA] only)
- All inorganic methods: full raw data print outs from instruments
- Full run log for each analysis
- ICPMS to include: internal standard recoveries, tune data (atomic mass unit [amu] and peak width), and molecular interference check data

1.6.4.3 Radiological Data Deliverable Package

All other summary forms need to be present, following the Form 1s, with clear association of the QC batch to each sample (on the CLP Form specified or equivalent), and all raw data associated with the sample analysis:

- Summary of all field sample results (as described above)
- Sample results and preparation blank (Form IA-IN and IB-IN)
- Certificates for National Institute of Standards and Technology (NIST)-traceable standards
- Background checks performed at the time of initial calibration
- Calibration points including efficiencies for each detector
- Report of evidence of decay correction of standard prior to the calculations of efficiencies
- Self-absorption curves for each detector, covering an appropriate range of residue masses
- Report of geometry, counting times, number of counts for each standard, measured activity for all standards, identify and true value of all standards
- Report of alpha-beta cross talk values and voltage plateaus
- Daily calibration verification (Form IIA-IN)
- Daily background and efficiency checks for each detector
- Tolerance chart of statistical control chart of the appropriate efficiencies and background activities (at least 20 points) with ± 2 sigma error (warning) or ± 3 sigma error (failure) limits
- Preparation blanks (Form III-IN)
- MS/MSD sample recovery and MS/MSD relative percent difference (RPD) (Form VA-IN)
- Laboratory duplicate precision calculated using duplicate (or replicate) error ratio (Form VI-IN)
- LCS recovery (Form VII-IN)
- Preparation log (Form XII-IN)
- Analysis run Log (Form XIII-IN)
- Sample log-in sheet (Form DC-1)
- Deliverables inventory sheet (Form DC-2)
- Case narrative
- Chain-of-custody

1.6.4.4 Electronic Data Deliverable

Laboratory electronic data deliverables (EDDs) will contain detailed sample and laboratory QC sample data, including associations with QC batch sample results in GeoTracker Electronic Deliverable Format (EDF). Specifications for the GeoTracker EDF are provided in Appendix H.

For radiological results (gross alpha and beta), the EDF “Reporting Limit” field (REPDL) will be populated with the MDC, and the reporting error or uncertainty will be input into EDF field “Parameter Uncertainty” (PARUN).

2.0 MEASUREMENT/DATA ACQUISITION

2.1.2 Sampling and Analytical Methods - General Considerations

Historically, and as specified in the PgmQAP, selenium has been analyzed using sodium hydroxide/hydrogen peroxide-hydride generation atomic absorption spectroscopy. Henceforth, selenium will be analyzed using ICPMS. ICPMS is sufficiently sensitive to detect selenium below of the project screening level (see Section 2.4.2), and there are no interferences from other hydride forming species (e.g., copper, arsenic, mercury) that would produce false-positive detections for selenium. As such, data generated using ICPMS will be comparable to historical data generated using atomic absorption.

Historically, and as specified in the PgmQAP, water samples for ICP metals have been analyzed using EPA 200.7, and water samples for ICPMS metals have been analyzed using EPA 200.8. Henceforth, water samples for ICP metals will be analyzed using EPA 6010B/C, and water samples for ICPMS metals will be analyzed using EPA 6020A.

2.3.1 Sampling Labeling and Handling

Surface water and groundwater samples collected in support of the monitoring program will be sent to the laboratory identified in project-specific SAP or QAPP Addendum.

2.4.2 Analytical Methods and Target Analyses

The surface water and groundwater monitoring parameters are listed on Table 2-6. The target parameters for any given surface water and groundwater monitoring event will be identified prior to the event and will be comprised of one or more of the monitoring parameters listed on Table 2-6.

The possible applicable screening values for surface water and groundwater sample results are summarized on Table 2-6. The project-required reporting limits and generally-achievable MDLs are listed on Table 2-6. With the following exceptions, the reporting limit and MDL for a given target parameter are less than its lowest screening value:

- Arsenic: The reporting limit (0.001 mg/L) and the MDL (0.00025 mg/L) are greater than the USEPA Regional Screening Level of 0.000045 mg/L.

- Mercury: The reporting limit (0.002 mg/L) and the MDL (0.001 mg/L) are greater than the National Aquatic Life Standard (chronic) of 0.00077 mg/L.

The project-specific SAP will need to identify which of the screening values listed on Table 2-6 apply. If the above screening values apply, then the project-specific SAP will need to provide a description of how non-detected results will be used in data assessment (e.g., a non-detected result treated as one-half the MDL value or the whole MDL value).

The reporting limit for the each of the following target parameters is greater than its given screening level, but its MDL is less than the screening level:

- Cadmium: The reporting limit (0.0005 mg/L) is greater than National Aquatic Life Standard (chronic) of 0.00025 mg/L, but the MDL (0.000125 mg/L) is less than it.
- Uranium: The reporting limit (0.040 mg/L) is greater than the drinking water standard of 0.03 mg/L, but the MDL (0.010 mg/L) is less than it.
- Mercury: The reporting limit (0.002 mg/L) is greater than the National Aquatic Life Standard (acute) of 0.0014 mg/L, but the MDL (0.001 mg/L) is less than it.

The laboratory will be able to detect cadmium, uranium, and mercury at concentrations equal to or greater than the screening levels identified above because the laboratory will quantify and report concentrations greater than their MDLs.

2.5.1.1 Equipment Blanks

Historically, equipment rinsate blank samples were collected at 10 percent of sampling locations, and at the same locations where triplicate samples and QA samples were collected. Henceforth, equipment rinsate blank samples will be collected on a daily basis, and, if more than one team collects samples on a given day, also by each sampling team. For the purpose of data validation (see Section 2.7.2), primary field samples will be associated to the equipment rinsate blank sample collected on the same day by a given sampling team. Equipment rinsate samples are not required if the sampling equipment is dedicated to the location being sampled (e.g., water samples collected with disposable bailers).

2.5.1.3 Matrix Spike and Matrix Spike Duplicate Samples

Site-specific samples need to be used for MS/MSDs. Field sampling personnel will collect extra volume and designate (on the chain-of-custody forms) the samples that are to be used for the MS/MSD. Every effort will be made to ensure that these samples are representative of the general sample matrix of samples collected on that sampling date. Equipment rinsate blank samples will not be designated for MS/MSDs.

2.6.2.2 Calibration Methods

The following tables will replace, for the specified instrumentation, laboratory QC and calibration criteria and laboratory corrective action procedures specified in Table 2-5:

- Table 2-7 replaces calibration and QC sample criteria provided for trace metals by ICPMS
- Table 2-8 replaces calibration and QC sample criteria provided for trace metals analysis by ICP.
- Table 2-9 replaces calibration and QC sample criteria provided for mercury by CVAA.

Tables 2-10 and 2-11 present calibration and QC sample and calibration criteria for major anions by EPA 300.0 (ion chromatography [IC]) and gross alpha and gross beta by EPA 900.0 (gas flow proportional counting system), respectively.

2.7.2 Analytical Data Validation

As specified in the PgmQAP, MWH performed data validation using SOP-NW-18.1 (provided in Appendix B of the PgmQAP). Henceforth, data validation will be performed by a 3rd party, and use of SOP-NW-18.1 will be discontinued. The 3rd party data validator will use the general protocols and processes described in the following documents, as applicable to the method calibration and QC limits specified on Tables 2-7 through 2-11:

- *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review* (NFG; USEPA, 2004).
- *Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use* (USPEA, 2009).

Validation will be documented using the templates provided in Appendix I of the PgmQAP.

Stage 2B Validation (USEPA, 2009) will be performed on approximately 90 percent of samples; this includes addressing the NFG assessment protocols as applicable to the method and as summarized on the QC forms (see Section 1.6.4.1) and does not include an example calculation from the raw data. Stage 4 Validation (USEPA, 2009) will be conducted on the remaining 10 percent of samples, and this will address the NFG assessment protocols as applicable to the method as summarized on the QC forms and

as itemized in Section 1.6.4.2. (As specified in Section 1.6.4, Level 4 data packages will be requested for one out of every five data packages produced, with a minimum of one Level 4 package for each field event. The 10 percent of samples will be randomly selected from those data packages.) A Stage 4 Validation also includes an example calculation from the raw instrument data. If a problem is discovered during the Stage 4 Validation that was not addressed in the Stage 2B Validation, then appropriate corrective action will be implemented for all data generated for the sampling event, including evaluation of the given specific problem in all data packages. Appropriate corrective action may include correction of an analytical reporting error and reissuing of relevant data.

The following are definitions of the data qualifiers (i.e., the "USEPA Flag"):

U The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

J The result is an estimated quantity. The associated numerical value is the approximated concentration of the analyte in the sample.

J+ The result is an estimated quantity, but the result may be biased high.

J- The result is an estimated quantity, but the result may be biased low.

R The result is unusable. The sample result is rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

UJ The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

The following are not data qualifiers but will be provided for the purpose of evaluating the laboratory's performance:

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

The following "Reason Codes" will be applied as applicable to the validated data:

1 Holding Time
2 Sample Preservation (including receipt temperature)
3 Sample Custody
4 Missing Deliverable
5 ICPMS Tune
6 Initial Calibration

7 Initial Calibration Verification
8 Continuing Calibration Verification
9 Low-Level Calibration Check Sample
10 Calibration Blank
11 Laboratory or Preparation Blank
12 ICPMS or ICP Interference Check Standard
13 Laboratory Control Sample or Laboratory Control Sample Duplicate Recovery
14 Laboratory Control Sample Precision
15 Laboratory Duplicate Precision
16 Matrix Spike or Matrix Spike Duplicate Recovery
17 Matrix Spike/Matrix Spike Duplicate Precision
18 ICPMS or ICP Serial Dilution
19 ICPMS Internal Standard
20 Field Replicate Precision
21 Equipment Rinsate Blank
22 Linear Range Exceeded
23 Other reason
24 Result is less than the MDC
25 Result is less than two times the error

MWH will provide an EDD to the 3rd party data validator to populate (specifications are provided in Table 2-12). The validator will add the following data:

- Field Header "USEPA Flag": Populate with EPA flags specified above and in template reports.
- Field Header "Reason Code": Populate with all applicable Reason Codes as specified above and in template reports.
- Field Header "Final Result": Populate with the final, qualified result, including any adjustment based on blank contamination.

The 3rd party data validator will perform a Manual Validation (USEPA, 2009) on the hard copy laboratory data packages.

2.7.4 Data Storage and Retrieval

A project database will be designed to incorporate, at minimum, sample collection information (e.g., sample identification, location, date and time of sample collected, matrix) and laboratory analytical fields specified in the project EDD requirements (Appendix H). The EPA flags, Reason Codes, and final, qualified data will be uploaded from EDDs that the data validators will populate as discussed in Section 2.7.2.

3.0 ASSESSMENT OVERSIGHT

There is no change to this section.

4.0 REFERENCES

MWH, 2004. *Program Quality Assurance Plan, Sampling and Analysis Plan for the Comprehensive Site Investigation for the Southeast Idaho Mine-Specific Selenium Program.* April.

Rowe, 2008a. E-mail correspondence from Michael Rowe, Idaho Department of Environmental Quality Project Manager, to Barry Koch, P4 Production Project Manager. Subject: P4/Monsanto – Approval of Contractors. September 9.

Rowe, 2008b. Letter from Michael Rowe, Idaho Department of Environmental Quality Project Manager, to Barry Koch, P4 Production Project Manager. Subject: P4/Monsanto – Approval of Contractors. September 16.

United States Environmental Protection Agency (USEPA), 2004. *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review.* EPA 540-R-04-004. October.

USEPA, 2009. *USEPA Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use.* EPA 540-R-08-005. January.

Tables 2-6 through 2-12

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TABLE 2-6

ACHIEVABLE LABORATORY LIMITS AND APPLICABLE PROJECT SCREENING VALUES
SURFACE WATER AND GROUNDWATER PARAMETERS
(Page 1 of 2)

Method	Monitoring Parameter [1]	Units	Achievable Laboratory Limits [2]		Applicable Screening Levels														
					State of Idaho Standards				IDEQ Area Wide RMP [6]					EPA MCL [12]		EPA Regional SL [13]	Health Comparison Values of Drinking Water [14]		National Standards Aquatic Life [15]	
					Ground Water [3]	Surface Water [4]	Aquatic Life [5]		Groundwater Levels		Surface Water Levels									
			RL	MDL			Acute	Chronic	Removal [7]	Monitoring [8]	Removal A [9]	Removal B [10]	Monitoring [11]	Primary	Secondary	Tap Water	Child	Adult	Acute	Chronic
EPA 6020A	Antimony	mg/L	0.001	0.00025	0.006	0.0056	- -	- -	- -	- -	- -	- -	- -	0.006	- -	0.015	0.004	0.010	- -	- -
	Arsenic	mg/L	0.001	0.00025	0.05	0.050	0.34 [a]	0.15 [a]	- -	- -	- -	- -	- -	0.01	- -	0.000045 [b]	0.003	0.010	0.34	0.15
	Cadmium	mg/L	0.0005	0.000125	0.005	- -	0.0013 [c]	0.0006 [c]	0.005	0.0010	0.0010	0.245	0.0007	- -	- -	0.018	- -	- -	0.0020 [d]	0.00025 [d,e]
	Chromium (total)	mg/L	0.002	0.0005	0.1	- -	0.57 [c,f]	0.074 [c,f]	0.1	0.0250	0.0740	8.7	0.0058	0.1	- -	55 [f]	0.1	0.1	0.57 [d,f]	0.074 [d,f]
	Cobalt	mg/L	0.001	0.00025	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	0.011	0.1	0.4	- -	- -
	Copper	mg/L	0.002	0.0005	1.3	- -	0.017 [c]	0.011 [c]	1.3	0.011	0.011	11.0	0.0033	1.3	1.0	1.5	0.1	0.4	0.013 [d]	0.0090 [d]
	Lead	mg/L	0.001	0.00025	0.015	- -	0.065 [c]	0.0025 [c]	- -	- -	- -	- -	- -	0.015	- -	3.7 [g]	- -	- -	0.065 [d]	0.0025 [d]
	Manganese	mg/L	0.002	0.0005	(0.05)	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	0.88	- -	- -	- -	- -
	Nickel	mg/L	0.004	0.001	- -	0.61	0.47 [c]	0.052 [c]	0.73	0.160	0.1600	0.614	0.0040	- -	- -	0.73	- -	- -	0.47 [d]	0.052 [d]
	Selenium	mg/L	0.001	0.0005	0.05	0.17	0.020 [h]	0.005 [h]	0.050	0.0050	0.0050	0.005 [i]	0.0016	- -	- -	0.18	- -	- -	notes [j,k]	0.0050 [k]
	Silver	mg/L	0.001	0.00025	(0.1)	- -	0.0034 [c]	- -	- -	- -	- -	- -	- -	- -	0.1	0.18	0.05	0.2	0.0032 [d]	- -
	Thallium	mg/L	0.0002	0.00005	0.002	0.00024	- -	- -	- -			- -		0.002	- -	0.0024	- -	- -	- -	- -
	Uranium	mg/L	0.040	0.010	- -	- -	- -	- -	- -	- -	- -	- -	- -	0.03 [e]	- -	0.11	0.03 [e]	0.03 [e]	- -	- -
	Zinc	mg/L	0.025	0.005	(5)	7.4	0.12 [c]	0.12 [c]	5.0	0.100	0.1000	43.4	0.059	- -	- -	11	- -	- -	0.12 [d]	0.12 [d]
EPA 6010B	Aluminum	mg/L	0.1	0.05	(0.2)	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	37	- -	- -	- -	- -
	Barium	mg/L	0.01	0.0025	2	- -	- -	- -	- -	- -	- -	- -	- -	2	- -	7.3	- -	- -	- -	- -
	Beryllium	mg/L	0.002	0.0005	0.004	- -	- -	- -	- -	- -	- -	- -	- -	0.004	- -	0.073	0.02	0.07	- -	- -
	Boron	mg/L	0.1	0.05	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	7.3	0.1	0.4	- -	- -
	Calcium	mg/L	0.2	0.1	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Iron	mg/L	0.1	0.025	(0.3)	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	26	- -	- -	- -	- -
	Magnesium	mg/L	0.5	0.25	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Molybdenum	mg/L	0.01	0.005	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	0.18	0.05	0.2	- -	- -
	Potassium	mg/L	1	0.25	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Sodium	mg/L	0.5	0.25	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Vanadium	mg/L	0.01	0.005	- -	- -	- -	- -	0.26	0.020	0.0200	0.972	0.0081 [e]	- -	- -	0.26	- -	- -	- -	- -
EPA 7470A	Mercury	mg/L	0.002	0.001	0.002	- -	- -	- -	- -	- -	- -	- -	- -	0.002	- -	0.0037 [l]	- -	- -	0.0014 [e]	0.00077 [b]
EPA 900	Gross alpha	pCi/L	5	na	15 [m]	- -	- -	- -	- -	- -	- -	- -	- -	15	- -	- -	- -	- -	- -	- -
	Gross beta	pCi/L	5	na	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
EPA 7196A	Chromium VI	mg/L	0.01	0.005	- -	- -	0.016 [a]	0.011 [a]	- -	- -	- -	- -	- -	- -	- -	0.11	- -	- -	0.016	0.011
EPA 300.0	Bromide	mg/L	0.2	0.1	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Chloride	mg/L	0.2	0.1	(250)	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Fluoride	mg/L	0.2	0.1	4	- -	- -	- -	- -	- -	- -	- -	- -	4.0	2.0	2.2 [n]	- -	- -	- -	- -
	Nitrate	mg/L	0.6	0.1	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Nitrite	mg/L	0.4	0.1	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	Sulfate	mg/L	1	0.5	(250)	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
EPA 353.2	Total Nitrate/Nitrite as N [o]	mg/L	0.05	0.025	10 [10/1]				- -	- -	- -	- -	- -	10 [10/1]	- -	[58/3.7]	- -	- -		
						- -	- -	- -											- -	- -
						- -	- -	- -											- -	- -
SM2340B	Hardness	mg/L	5	5	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
EPA 310.2	Alkalinity, total	mg/L	10	5	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
EPA 160.1	TDS	mg/L	10	5	(500)	- -	- -	- -	- -	- -	- -	- -	- -	- -	500	- -	- -	- -	- -	- -
EPA 160.2	TSS	mg/L	5	2.5	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -

TABLE 2-6

ACHIEVABLE LABORATORY LIMITS AND APPLICABLE PROJECT SCREENING VALUES
SURFACE WATER AND GROUNDWATER PARAMETERS

[1] The project- or event-specific target parameter list will be established prior to the sampling event; samples may or may not be analyzed for all listed parameters.
[2] Generally achievable laboratory reporting limits; method detection limits will vary annually and by laboratory.
[3] State of Idaho Ground Water Quality Rule (IDAPA 58.01.11); secondary standard in parentheses.
[4] State of Idaho Surface Water Quality for Domestic Water Supply Use (IDAPA 58.01.02).
[5] State of Idaho Surface Water Quality for Aquatic Life (IDAPA 58.01.02); Acute Criteria (CMC) and Chronic Criteria (CCC).
[6] Removal action and monitoring levels; Area Wide Risk Management Plan (RMP; IDEQ 2004).
[7] Values are "total recoverable" (unfiltered).
[8] Values are unfiltered.
[9] Removal action levels are those for the CWA/State Water Quality Rules for Regulated Surface Water. All values, except those for selenium and vanadium, are based on hardness-adjusted dissolved constituent analyses; selenium value is "total recoverable" and vanadium value is dissolved (neither are hardness dependant).
[10] Removal action levels those are for surface waters not subject to CWA/IDAPA Biota Standards.
[11] Monitoring action levels, except that for selenium, are based on dissolved constituent analyses; selenium value is "total recoverable."
[12] EPA primary and secondary Maximum Contaminant Level (MCL), National Primary Drinking Water Regulations, EPA (http://www.epa.gov/safewater/contaminants/index.html#rads, 17 March 2008).
[13] EPA Regional Screening Levels for Chemical Contaminants at Superfund Sites (http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm, 12 September 2008).
[14] Public Health Assessment: Southeast Idaho Phosphate Mining Resource Area: Bannock, Bear Lake, Bingham, and Caribou Counties, Idaho EPA Facility ID: IDN001002245 (U.S. Department of Health and Human Services, Public Health Services, Agency for Toxic Substances and Disease Registry, 2006).
[15] Freshwater standards from the National Recommended Water Quality Criteria for Priority Pollutants (USEPA, 2006); Acute Criteria (CMC) and Chronic Criteria (CCC).

[a] Criteria for these metals are expressed as a function of the water effect ratio, WER, as defined in Subsection 210.03.c.iii of IDAPA 58.01.02
[b] Reporting limit and MDL are greater than screening value.
[c] Aquatic life criteria for these metals are expressed as a function of total hardness (mg/L as calcium carbonate), the pollutant's water effect ratio (WER) as defined in Subsection 210.03.c.iii of IDAPA 58.01.02 and multiplied by an appropriate dissolved conversion factor as defined in Subsection 210.02. For comparative purposes only, the values displayed in this table are shown as dissolved metal and correspond to a total hardness of one hundred (100) mg/L and a water effect ratio of one (1.0).
[d] The freshwater criterion for this metal is expressed as a function of hardness (mg/L) in the water column. The value given here corresponds to a hardness of 100 mg/L. Criteria values for other hardness may be calculated from the following: CMC (dissolved) = exp $\{m_A[\ln(\text{hardness})]+b_A\}$ (CF), or CCC (dissolved) = exp $\{m_C[\ln(\text{hardness})]+b_C\}$ (CF) and the parameters specified in Appendix B - Parameters for Calculating Freshwater Dissolved Metals Criteria That Are Hardness-Dependent.
[e] Reporting limit is greater than screening value, but MDL is less than the screening value.
[f] Value is for chromium III.
[g] Value is for tetraethyl lead.
[h] Criterion is expressed as total recoverable (unfiltered) concentration.
[i] Selenium values are 0.005 mg/L for riparian habitat use, 0.050 mg/L for domestic animal drinking water use, and 0.201 mg/L for transitory wildlife drinking water.
[j] The CMC = 1/[(f1/CMC1)+(f2/CMC2)] where f1 and f2 are the fractions of total selenium that are treated as selenite and selenate, respectively, and CMC1 and CMC2 are 0.1859 mg/L and 0.01282 mg/L, respectively.
[k] This recommended water quality criterion for selenium is expressed in terms of total recoverable metal in the water column. It is scientifically acceptable to use the conversion factor (0.996- CMC or 0.922-CCC) that was used in the GLI (60FR15393-15399, March 23, 1995; 40CFR132 Appendix A) to convert this to a value that is expressed in terms of dissolved metal.
[l] Value is for methyl mercury.
[m] Includes radium-226, excludes radon and uranium.
[n] Value is for soluble fluoride.
[o] Values in brackets are the individual values for nitrate/nitrite.

CWA - Clean Water Act
IDAPA Idaho Administrative Protection Agency'
IDEQ - Idaho Department of Environmental Quality
mg/L - milligrams per liter
na - not applicable to this method
pCi/L - picocuries per liter
TDS - total dissolved solids
TSS - total suspended solids

TABLE 2-7

SUMMARY OF CALIBRATION AND QC PROCEDURES FOR EPA METHOD 6020A (ICPMS)
(Page 1 of 4)

Quality Control Check	Minimum Frequency	Acceptance Criteria	Corrective Action/Lab Flagging Criteria	Data Validation Reference Section [a]	Data Validation Qualification [b]
MS tuning sample	Prior to initial calibration, solution as specified in Section 7.10 of method (e.g., ^{7}Li, ^{59}Co, ^{115}In, and ^{205}Tl)	Mass calibration ≤ 0.1 amu from the true value. Resolution < 0.9 amu full width at 10% peak height. Stability: RSD ≤ 5% for at least three replicate analysis.	Retune instrument then reanalyzing tuning solution.	Per Section II of ICP-MS NFG, except substitute with method acceptance limits.	RSD > 5% = J/UJ (professional judgment on criteria related to non-target analytes).
Initial calibration (ICAL) for all target analytes (minimum one standard and a blank)	Daily initial calibration prior to sample analysis	If more that one standard is used, correlation coefficient (r) $\geq$ 0.995	Correct problem then repeat initial calibration.	Per Section III of ICP-MS NFG.	r < 0.995 = J/UJ
Initial Calibration Verification (ICV)	After ICAL, before beginning a sample run (at a concentration other than used for calibration and from a second source)	All analytes within $\pm$10% of expected value	Correct problem and verify second source standard. Rerun ICV. If that fails, correct problem and repeat ICAL.	Per Section III of ICP-MS NFG.	%R < 90 or >110% = J/UJ
Initial Calibration Blank (ICB)	After ICV	No analyte detected $\geq$ 2X MDL	Correct problem and reanalyze.	Per Section IV of ICPMS NFG, except U at detected value if result > MDL < RL.	Per Table 14 in NFG, except U at detected value if result > MDL < RL.
Low-Level Calibration Check Standard (LLCCS)	Daily, after ICAL (at a concentration ≤ RLs).	The analyte(s) within $\pm$30% of expected value.	Correct problem then reanalyze.	Per Section III of ICP-MS NFG.	%R < 70% or > 130% (%R < 50% or > 150% for Co, Mn, or Zn) = J/UJ

TABLE 2-7

SUMMARY OF CALIBRATION AND QC PROCEDURES FOR EPA METHOD 6020A (ICPMS)
(Page 2 of 4)

Quality Control Check	Minimum Frequency	Acceptance Criteria	Corrective Action/Lab Flagging Criteria	Data Validation Reference Section [a]	Data Validation Qualification [b]
Interference Check Solution A & AB (ICS-A & ICS-AB)	At the beginning of an analytical run or once during a 12-hour period, whichever is more frequent	ICS-A: All non-spiked analytes < 2X MDL. ICS-AB: Within ± 20% of expected value.	Correct problem and reanalyze ICS-A and ICS-AB.	Per Section III of ICP-MS NFG.	ICS < 80% or > 120% = J/UJ
Continuing Calibration Verification (CCV)	After every 10 samples and at the end of the analysis sequence (at a mid-calibration range concentration)	The analyte within ±10% of expected value	Correct problem then repeat CCV and reanalyze all samples since last successful CCV.	Per Section III of ICP-MS NFG.	CCV < 90 or > 110% = J/UJ
Continuing Calibration Blank (CCB)	Before beginning a sample run, after every 10 samples, and at end of the analytical sequence	No analyte detected ≥ 2X MDL	Correct problem then reanalyze calibration blank and previous 10 samples. Apply "B" flag to all associated positive results for the specific analyte(s) as appropriate.	Per Section IV of ICPMS NFG, except U at detected value if result > MDL < RL.	Per Table 14 in NFG, except U at detected value if result > MDL < RL.
Method blank (or preparation blank)	One per analytical batch	No analyte detected ≥ RL	Assess data. Correct problem. If necessary, reprep and analyze method blank and all samples processed with the contaminated blank. Apply B-flag to all associated positive results for the specific analyte(s) in the preparation batch.	Per Section IV of ICPMS NFG, except U at detected value if result > MDL < RL.	Per Table 14 in NFG, except U at detected value if result > MDL < RL.

TABLE 2-7

SUMMARY OF CALIBRATION AND QC PROCEDURES FOR EPA METHOD 6020A (ICPMS)
(Page 3 of 4)

Quality Control Check	Minimum Frequency	Acceptance Criteria	Corrective Action/Lab Flagging Criteria	Data Validation Reference Section [a]	Data Validation Qualification [b]
Laboratory Control Sample (LCS) for all analytes	One LCS per analytical batch	Vendor-specified or laboratory-determined control limits (but not wider than 80-120% recovery). If LCS/LSC duplicate (LCSD) used, then use RPD ≤ 20.	Correct problem then reanalyze. If still out, re-prepare and reanalyze the LCS and all samples in the preparation batch.	Per Section VI of ICP-MS NFG, except substitute 80-120% recovery and ≤ 20 RPD limits.	%R < 80 or > 120% for water = J/UJ; < 50% = J detects, R non-detects
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One MS/MSD per every 20 samples per matrix	Laboratory-determined control limits (but not wider than 75-125% recovery and RPD ≤ 20).	Flag associated sample results and perform post-digestion spike addition.	Per Section VIII of ICP-MS NFG, except substitute 75-125% recovery and ≤ 20 RPD limits.	%R < 75 or > 125% for water = J/UJ; < 30% = J detects, R non-detects. Water RPD <20%, soil < 35%. Low level (< 5 X RL, use ± RL water, 2 X RL for soil). For MS, if %R < 30% and post spike< 75% or not run, J detects, R non-detects. If post spike > 75 %, UJ non-detects and J detects.
Post-digestion spike addition	If MS/MSD fails	Recovery within 75-125% of expected results.	Perform dilution test.	Not applicable	None; see dilution test.
Serial dilution (SD) test	One SD sample per every 20 samples (required for samples containing concentrations > 50 X MDL)	Fivefold (1+4) dilution must agree within ±10% of the original determination.	Flag associated sample results and discuss in case narrative.	Per Section IX of ICP-MS NFG.	%D < 90 > 110% = J/UJ

TABLE 2-7

SUMMARY OF CALIBRATION AND QC PROCEDURES FOR EPA METHOD 6020A (ICPMS)
(Page 4 of 4)

Quality Control Check	Minimum Frequency	Acceptance Criteria	Corrective Action/Lab Flagging Criteria	Data Validation Reference Section [a]	Data Validation Qualification [b]
Internal Standards (ISs)	Every sample; internal standards selected from list specified in Section 1.4 of method.	IS intensity ≥ 70% < 130% of intensity of the IS in the ICAL.	Perform corrective action as described in Section 9.6 of method.	Per Section X of ICP-MS NFG, except substitute 70-130 % limits.	IS %R < 70% > 130 % = J/UJ
Concentrations between the MDL and RL	All samples	Not applicable	Flag as estimated value ("J" flag)	Not applicable	Not applicable

[a] National Functional Guidelines (NFG) for Inorganic Data Review (USEPA, 2004).
[b] Refer to NFG for detailed evaluation protocols.

MDL – method detection limit
RL – reporting limit
RPD – relative percent difference
RSD – relative standard deviation

TABLE 2-8

SUMMARY OF CALIBRATION AND QC PROCEDURES FOR EPA METHOD 6010B/C (ICP)
(Page 1 of 3)

Quality Control Check	Minimum Frequency	Acceptance Criteria	Corrective Action/Lab Flagging Criteria	Data Validation Reference Section [a]	Data Validation Qualification [b]
Initial calibration (ICAL) for all target analytes (minimum one standard and a blank)	Daily initial calibration prior to sample analysis	If more that one standard is used, correlation coefficient (r) $\geq$ 0.995	Correct problem then repeat initial calibration.	Per Section II of ICP NFG.	r < 0.995 = J/UJ
Initial Calibration Verification (ICV)	After ICAL, before beginning a sample run (at a concentration other than used for calibration and from a second source)	All analytes within $\pm$10% of expected value	Correct problem and verify second source standard. Rerun ICV. If that fails, correct problem and repeat ICAL.	Per Section II of ICP NFG.	%R < 90 or >110% = J/UJ
Initial Calibration Blank (ICB)	After ICV	No analyte detected $\geq$ 2X MDL	Correct problem and reanalyze.	Per Section III of ICP NFG, except U at detected value if result > MDL < RL.	Per Table 4 in NFG, except U at detected value if result > MDL < RL.
Low-Level Calibration Check Standard (LLCCS)	Daily, after ICAL (at a concentration ≤ RLs).	The analyte(s) within $\pm$30% of expected value.	Correct problem then reanalyze.	Per Section II of ICP NFG.	%R < 70% or > 130% (%R < 50% or > 150% for Sb, Pb, Tl) = J/UJ
Interference Check Solution A & AB (ICS-A & ICS-AB)	At the beginning of an analytical run	ICS-A: All non-spiked analytes < 2X MDL. ICS-AB: Within ± 20% of expected value.	Correct problem and reanalyze ICS-A and ICS-AB.	Per Section IV of ICP NFG.	ICS < 80% or > 120% = J/UJ

TABLE 2-8

SUMMARY OF CALIBRATION AND QC PROCEDURES FOR EPA METHOD 6010B/C (ICP)
(Page 2 of 3)

Quality Control Check	Minimum Frequency	Acceptance Criteria	Corrective Action/Lab Flagging Criteria	Data Validation Reference Section [a]	Data Validation Qualification [b]
Continuing Calibration Verification (CCV)	After every 10 samples and at the end of the analysis sequence (at a mid-calibration range concentration)	The analyte within ±10% of expected value	Correct problem then repeat CCV and reanalyze all samples since last successful CCV.	Per Section II of ICP NFG.	CCV < 90 or > 110% = J/UJ
Continuing Calibration Blank (CCB)	Before beginning a sample run, after every 10 samples, and at end of the analytical sequence	No analyte detected ≥ 2X MDL	Correct problem then reanalyze calibration blank and previous 10 samples. Apply "B" flag to all associated positive results for the specific analyte(s) as appropriate.	Per Section III of ICP NFG, except U at detected value if result > MDL < RL.	Per Table 4 in NFG, except U at detected value if result > MDL < RL.
Method blank (or preparation blank)	One per analytical batch	No analyte detected ≥ RL	Assess data. Correct problem. If necessary, reprep and analyze method blank and all samples processed with the contaminated blank. Apply B-flag to all associated positive results for the specific analyte(s) in the preparation batch.	Per Section III of ICP NFG, except U at detected value if result > MDL < RL.	Per Table 4 in NFG, except U at detected value if result > MDL < RL.
LCS for all analytes	One LCS per analytical batch	Vendor-specified or laboratory-determined control limits (but not wider than 80-120% recovery). If LCS/LSC duplicate (LCSD) used, then use RPD ≤ 20.	Correct problem then reanalyze. If still out, re-prepare and reanalyze the LCS and all samples in the preparation batch.	Per Section V of ICP NFG, except substitute 80-120% recovery and ≤ 20 RPD limits.	%R < 80 or > 120% for water = J/UJ; < 50% = J detects, R non-detects

TABLE 2-8

SUMMARY OF CALIBRATION AND QC PROCEDURES FOR EPA METHOD 6010B/C (ICP)
(Page 3 of 3)

Quality Control Check	Minimum Frequency	Acceptance Criteria	Corrective Action/Lab Flagging Criteria	Data Validation Reference Section [a]	Data Validation Qualification [b]
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One MS/MSD per every 20 samples per matrix	Laboratory-determined control limits (but not wider than 75-125% recovery and RPD ≤ 20).	Flag associated sample results and perform post-digestion spike addition.	Per Section VII of ICP NFG, except substitute 75-125% recovery and ≤ 20 RPD limits.	%R < 75 or > 125% for water = J/UJ; < 30% = J detects, R non-detects. Water RPD <20%, soil < 35%. Low level (< 5 X RL, use ± RL water, 2 X RL for soil). For MS, if %R < 30% and post spike< 75% or not run, J detects, R non-detects. If post spike > 75 %, UJ non-detects and J detects.
Post-digestion spike addition	If MS/MSD fails	Recovery within 75-125% of expected results.	Perform dilution test.	Not applicable	None; see dilution test.
Serial dilution (SD) test	One SD sample per every 20 samples (required for samples containing concentrations > 50 X MDL)	Fivefold (1+4) dilution must agree within ±10% of the original determination.	Flag associated sample results and discuss in case narrative.	Per Section VIII of ICP NFG.	%D < 90 > 110% = J/UJ
Concentrations between the MDL and RL	All samples	Not applicable	Flag as estimated value (“J” flag)	Not applicable	Not applicable

[a] National Functional Guidelines (NFG) for Inorganic Data Review (USEPA, 2004).
[b] Refer to NFG for detailed evaluation protocols.

MDL – method detection limit
RL – reporting limit

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TABLE 2-9

SUMMARY OF CALIBRATION AND QC PROCEDURES FOR EPA METHOD 7470A/7471A (CVAA)
(Page 1 of 3)

Quality Control Check	Minimum Frequency	Acceptance Criteria	Corrective Action/Lab Flagging Criteria	Data Validation Reference Section [a]	Data Validation Qualification [b]
Initial calibration (ICAL) for all target analytes (minimum five standards and a blank)	Daily initial calibration prior to sample analysis	Blank plus five calibration concentrations, correlation coefficient (r) $\geq$ 0.995	Correct problem then repeat initial calibration.	Per Section II of AA NFG.	r < 0.995 = J/UJ
Initial Calibration Verification (ICV)	After ICAL, before beginning a sample run (at a concentration other than used for calibration and from a second source)	All analytes within $\pm$10% of expected value	Correct problem and verify second source standard. Rerun ICV. If that fails, correct problem and repeat ICAL.	Per Section II of AA NFG.	%R < 80 or >120% = J/UJ
Initial Calibration Blank (ICB)	After ICV	No analyte detected $\geq$ 2X MDL	Correct problem and reanalyze.	Per Section III of AA NFG, except U at detected value if result > MDL < RL.	Per Table 24 in NFG, except U at detected value if result > MDL < RL.
Low-Level Calibration Check Standard (LLCCS)	Daily, after ICAL (at a concentration ≤ RLs).	The analyte(s) within $\pm$30% of expected value.	Correct problem then reanalyze.	Per Section II of AA NFG.	%R < 70% or > 130% = J/UJ
Continuing Calibration Verification (CCV)	After every 10 samples and at the end of the analysis sequence (at a mid-calibration range concentration)	The analyte within $\pm$10% of expected value	Correct problem then repeat CCV and reanalyze all samples since last successful CCV.	Per Section II of AA NFG.	CCV < 80 or > 120% = J/UJ

TABLE 2-9

SUMMARY OF CALIBRATION AND QC PROCEDURES FOR EPA METHOD 7470A/7471A (CVAA)
(Page 2 of 3)

Quality Control Check	Minimum Frequency	Acceptance Criteria	Corrective Action/Lab Flagging Criteria	Data Validation Reference Section [a]	Data Validation Qualification [b]
Continuing Calibration Blank (CCB)	Before beginning a sample run, after every 10 samples, and at end of the analytical sequence	No analyte detected ≥ 2X MDL	Correct problem then reanalyze calibration blank and previous 10 samples. Apply "B" flag to all associated positive results for the specific analyte(s) as appropriate.	Per Section III of AA NFG, except U at detected value if result > MDL < RL.	Per Table 24 in NFG, except U at detected value if result > MDL < RL.
Method blank (or preparation blank)	One per analytical batch	No analyte detected ≥ RL	Assess data. Correct problem. If necessary, reprep and analyze method blank and all samples processed with the contaminated blank. Apply B-flag to all associated positive results for the specific analyte(s) in the preparation batch.	Per Section III of AA NFG, except U at detected value if result > MDL < RL.	Per Table 24 in NFG, except U at detected value if result > MDL < RL.
LCS for all analytes	One LCS per analytical batch	Vendor-specified or laboratory-determined control limits (but not wider than 80-120% recovery). If LCS/LSC duplicate (LCSD) used, then use RPD ≤ 20.	Correct problem then reanalyze. If still out, re-prepare and reanalyze the LCS and all samples in the preparation batch.	Per Section IV of AA NFG, except substitute 80-120% recovery and ≤ 20 RPD limits.	%R < 80 or > 120% for water = J/UJ; < 50% = J detects, R non-detects
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One MS/MSD per every 20 samples per matrix	Laboratory-determined control limits (but not wider than 75-125% recovery and RPD ≤ 20).	Flag associated sample results and perform post-digestion spike addition.	Per Section VI of AA NFG, except substitute 75-125% recovery and ≤ 20 RPD limits.	%R < 75 or > 125% for water = J/UJ; < 30% = J detects, R non-detects. Water RPD <20%, soil < 35%. Low level (< 5 X RL, use ± RL water, 2 X RL for soil).

TABLE 2-9

SUMMARY OF CALIBRATION AND QC PROCEDURES FOR EPA METHOD 7470A/7471A (CVAA)
(Page 3 of 3)

Quality Control Check	Minimum Frequency	Acceptance Criteria	Corrective Action/Lab Flagging Criteria	Data Validation Reference Section [a]	Data Validation Qualification [b]
Concentration between the MDL and RL	All samples	Not applicable	Flag as estimated value ("J" flag)	Not applicable	Not applicable

[a] National Functional Guidelines (NFG) for Inorganic Data Review (USEPA, 2004).
[b] Refer to NFG for detailed evaluation protocols.

MDL – method detection limit
RL – reporting limit

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TABLE 2-10

SUMMARY OF CALIBRATION AND QC PROCEDURES FOR EPA METHOD 9056/300.0 (IC)
(Page 1 of 2)

Quality Control Check	Minimum Frequency	Acceptance Criteria	Corrective Action/Lab Flagging Criteria	Data Validation Procedure	Data Validation Qualification
Initial calibration (ICAL) for all target analytes	Daily initial calibration prior to sample analysis	Five or more calibration concentrations, correlation coefficient (r) $\geq$ 0.995 or relative standard deviation $\leq$ 10%.	Correct problem then repeat initial calibration.	Evaluate r or RSD against control limits.	r < 0.995 = J/UJ or RSD > 10% = J/UJ
Initial Calibration Verification (ICV)	After ICAL, before beginning a sample run (at a concentration other than used for calibration and from a second source)	All analytes within $\pm$10% of expected value. Retention time (RT) window set at ± 3 times the standard deviation for each analyte in runs within a 24-hour period; daily midpoint established from RT of analyte in ICV.	Correct problem and verify second source standard. Rerun ICV. If that fails, correct problem and repeat ICAL.	Evaluate percent recovery.	%R < 90 or >110% = J/UJ; if %R > 130% or < 70%, then R/J.
Initial Calibration Blank (ICB)	After ICV	No analyte detected $\geq$ 2X MDL	Correct problem and reanalyze.	Evaluate blank result against criterion.	ICB or CCB > MDL = U at RL or U at detected value if analyte detected ≥ RL
Continuing Calibration Verification (CCV)	After every 10 samples and at the end of the analysis sequence (at a mid-calibration range concentration)	The analyte within $\pm$10% of expected value	Correct problem then repeat CCV and reanalyze all samples since last successful CCV.	Evaluate percent recovery.	%R < 90 or >110% = J/UJ; if %R > 130% or < 70%, then R/J.

TABLE 2-10

SUMMARY OF CALIBRATION AND QC PROCEDURES FOR EPA METHOD 9056/300.0 (IC)
(Page 2 of 2)

Quality Control Check	Minimum Frequency	Acceptance Criteria	Corrective Action/Lab Flagging Criteria	Data Validation Procedure	Data Validation Qualification
Continuing Calibration Blank (CCB)	Before beginning a sample run, after every 10 samples, and at end of the analytical sequence	No analyte detected ≥ 2X MDL	Correct problem then reanalyze calibration blank and previous 10 samples. Apply "B" flag to all associated positive results for the specific analyte(s) as appropriate.	Evaluate blank result against criterion.	ICB or CCB > MDL = U at RL or U at detected value if analyte detected ≥ RL
Method blank (or preparation blank)	One per analytical batch	No analyte detected ≥ RL	Assess data. Correct problem. If necessary, reprep and analyze method blank and all samples processed with the contaminated blank. Apply B-flag to all associated positive results for the specific analyte(s) in the preparation batch.	Evaluate blank result against criterion.	MB/PB > MDL = U at RL or U at detected value if analyte detected ≥ RL
Laboratory Control Sample (LCS) for all analytes	One LCS per analytical batch	Vendor-specified or laboratory-determined control limits (but not wider than 80-120% recovery). If LCS/LSC duplicate (LCSD) used, then use RPD ≤ 20.	Correct problem then reanalyze. If still out, re-prepare and reanalyze the LCS and all samples in the preparation batch.	Evaluate %R against control limits.	%R < 80 or > 120% for water = J/UJ; < 50% = J detects, R non-detects
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One MS/MSD per every 20 samples per matrix	Laboratory-determined control limits (but not wider than 80-120% recovery and RPD ≤ 20).	Flag associated sample results and perform post-digestion spike addition.	Evaluate %R against control limits.	%R < 80 or > 120% for water = J/UJ; < 30% = J detects, R non-detects.

IC – ion chromatography
MDL – method detection limit
RL – reporting limit

TABLE 2-11

SUMMARY OF CALIBRATION AND QC PROCEDURES FOR GROSS ALPHA AND BETA BY EPA METHOD 900.0
(Page 1 of 3)

Quality Control Check	Minimum Frequency	Acceptance Criteria	Corrective Action/Lab Flagging Criteria	Data Validation Procedure	Data Validation Qualification
Sample Handling and Preservation	Each sample at time of collection	Preserve with 1N nitric acid to pH < 2. If not preserved at time of collection, they should be brought to the laboratory within 5 days, then preserved and held in the original container for a minimum of 16 hours before analysis or transfer of the sample.	Flag sample results, as needed.	Evaluate preservation and holding times against criteria.	Flag as estimated (J/UJ) if samples were not properly preserved or holding time exceeded. Reject data if gross exceedance.
Initial Calibration (ICAL) Efficiency Determination for Gross Alpha and Beta	As needed, per Section 7.1 of method	Use NBS or NBS-traceable standard reference material for americium-241 (for gross alpha) and strontium-90 or cesium-137 (for gross beta). Prepare alpha and beta particle self-absorption graphs showing water sample residue weight (mg) versus the efficiency factor (dpm/cpm) (between 8 and 12 points, covering the residue mass range).	Correct problem then repeat initial calibration.	Confirm items listed on data validation report template (Appendix I).	Reject sample results if standards are not NBS- or NIST-traceable.
Daily Efficiency and Background Check for Gross Alpha and Beta	Daily prior to sample analysis	Create efficiency and background control charts (use approximately 20 points) for daily efficiencies and background checks. Acceptance criterion is ± 2 sigma error (warning limits); ± 3 sigma error indicates failure.	Correct problem, reanalyze. If still out, recalibrate.	Confirm items listed on data validation report template (Appendix I). Tolerance chart or statistical control chart of the appropriate efficiencies and background activities within ± 3 sigma error.	Reject sample results if results were generated from initial calibration with greater than or equal to ± 3 sigma error.
Method blank (or preparation blank)	One per analytical batch	Method blank < MDC.	Reanalyze; if still fails, re-prepare sample batch.	Verify method blank results is < MDC.	If method blank is ≥ MDC, then flag UJ all associated sample results that are < 5x the method blank concentration.

TABLE 2-11

SUMMARY OF CALIBRATION AND QC PROCEDURES FOR GROSS ALPHA AND BETA BY EPA METHOD 900.0
(Page 2 of 3)

Quality Control Check	Minimum Frequency	Acceptance Criteria	Corrective Action/Lab Flagging Criteria	Data Validation Procedure	Data Validation Qualification
Laboratory Duplicate	One laboratory duplicate per preparation batch	Duplicate error ratio (DER) ≤ 1.42 or RPD ≤ 20.	Reanalyze; if still fails, re-prepare sample batch.	Verify DER and/or RPD is within control limits	If DER > 1.42 and/or RPD > 20, then evaluated results. If result(s) ≥ 5x MDC, then J. If result(s) < 5x MDC, and absolute difference is with ± MDC (water) or ± 2xMDC (soil), then no flag; if > ± MDC (water) or ± 2xMDC (soil), then J/UJ.
Laboratory Control Sample (LCS) for all analytes	One LCS per preparation batch	75-125% recovery	Reanalyze; if still fails, re-prepare sample batch.	Verify %Rs are within control limits	%R < 75 or > 125% = J/UJ; < 50% = J detects, R non-detects
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One MS/MSD per every 20 samples per matrix	65-135% recovery; ≤ 20% RPD	Flag results	Verify %Rs and RPD are within control limits	%R < 65 or > 135% = J/UJ; < 30% = J detects, R non-detects. RPD > 20 = U/UJ
Sample Reporting	Each sample in picoCurries per liter (pCi/L)	Report MDC and uncertainty (2 sigma error).	Do not report results that are either (a) < MDC, or (b) 2x uncertainty	Verify sample results against MDCs and 2x uncertainty.	If sample result < MDC, then U at MDC. If sample result < 2x uncertainty, then U at MDC if < MDC or U at reported value if ≥ MDC.

TABLE 2-11

SUMMARY OF CALIBRATION AND QC PROCEDURES FOR GROSS ALPHA AND BETA BY EPA METHOD 900.0
(Page 3 of 3)

MDC – minimum detectable concentration
RPD – relative percent difference

DER – duplicate (or replicate) error ratio

$$= \frac{\left| ([\text{Sample}] - [\text{Duplicate}]) \right|}{([2 \text{ sigma error}^2_{\text{Sample}}] + [2 \text{ sigma error}^2_{\text{Duplicate}}])^{1/2}}$$

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TABLE 2-12

DATA VALIDATION EDD FORMAT

EDD Field Number	Field Name [1]	Description	Reference [1]
1	INVESTIGATION	Field Activity	NA
2	EDDNAME	Lab SDG Number	NA
3	LABSAMPID	Lab Sample Identifier	ERPIMS 4.0 DLH
4	LOCID	Location Name	ERPIMS 4.0 DLH
5	MATRIX	Sampling Matrix	ERPIMS 4.0 DLH
6	SBD	Sample Beginning Depth	ERPIMS 4.0 DLH
7	SED	Sample Ending Depth	ERPIMS 4.0 DLH
8	LOGDATE	Sample Date	ERPIMS 4.0 DLH
9	LOGTIME	Sample Time	ERPIMS 4.0 DLH
10	LABCODE	USAF Lab Identifier	ERPIMS 4.0 DLH
11	SACODE	Sample Type	ERPIMS 4.0 DLH
12	SAMPNO	Sample Number	ERPIMS 4.0 DLH
13	ANMCODE	Analytical Method Code	ERPIMS 4.0 DLH
14	EXMCODE	Extraction Method Code	ERPIMS 4.0 DLH
15	EXTDATE	Extraction Date	ERPIMS 4.0 DLH
16	EXTTIME	Extraction Time	ERPIMS 4.0 DLH
17	ANADATE	Analysis Date	ERPIMS 4.0 DLH
18	ANATIME	Analysis Time	ERPIMS 4.0 DLH
19	PARLABEL	Parameter Label	ERPIMS 4.0 DLH
20	PARVAL	Measured Concentration	ERPIMS 4.0 DLH
21	UNITS	Units of Measure	ERPIMS 4.0 DLH
22	PARVQ	Parameter Value Qualifier	ERPIMS 4.0 DLH
23	DILUTION	Dilution Factor	ERPIMS 4.0 DLH
24	FLDSAMPID	Field Sample ID	ERPIMS 4.0 DLH
25	RL	Reporting Limit	ERPIMS 4.0 DLH
26	COMPNAME	Compound Name	NA
27	LABLOTCTL	Laboratory Lot Control	ERPIMS 4.0 DLH
28	USEPA FLAG [a]	USEPA Validation Qualifiers	NA
29	REASON CODE [b]	MWH Reason Code	NA
30	FINAL RESULT [c]	Final Analytical Result	NA

[1] References ERPIMS field name; use equivalent GeoTracker EDF field.

[a] Data validators to enter USEPA flags in this field.
[b] Data validator to enter Reason Codes in this field
[c] Field used when data validator changes original result from that reported in laboratory report.

EDD – electronic data deliverable
EDF – Electronic Deliverable Form
ERPIMS – Environmental Resource Program Information Management System
NA – not applicable
USEPA – United States Environmental Protection Agency

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Figure 1-2

Sample Chain of Custody Form

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MWH

CHAIN OF CUSTODY RECORD

MWH CONTACT PERSON: Suzanne Anderson (425) 896-6966

FED EX #: _____ **COOLER #:** _____ **LAB:** _____

SAMPLER(S) PRINTED NAME AND SIGNATURE

PROJECT NAME: P4 Production, LLC

[Identify Sampling Event]

PROJECT NUMBER: 1005813-20101

ANALYSIS REQUEST

SAMPLE ID	DATE	TIME	MATRIX	Dissolved: Cd,Cr,Mn,Ni,V,Zn (SW6020A)	Dissolved: Al,Ca,Fe,Mg,Na,K (SW6010B)	Dissolved: Cd,Cr,Mn,Ni,Se,V,Zn (SW6020A)	Dissolved: As,Ba,Cd,Cr,Pb,Mn,Ni,Se,Tl,V,Zn (SW6020A)	Dissolved: Uranium (SW6020A)	Dissolved: Al,B,Ca,Fe,Mg,Mo,Na,K (SW6010B)	Dissolved: Hardness Calculation (SM2340B)	Dissolved: Chloride and Sulfate (E300.0)	Dissolved: Alkalinity (SM2320B)		Total: Selenium (SW6020A)	Total: Cd,Cr,Mn,Ni,Se,V,Zn (SW6020A)	Total: Al and Fe (SW6010B)	Total: As,Ba,Cd,Cr,Pb,Mn,Ni,Se,Tl,V,Zn (SW6020A)	Total: Uranium (SW6020A)	Total: Al,B,Fe,Mo (SW6010B)	Total: TDS (E 160.1)	Total: TSS (E 160.2)	Comments
				1	2	3	4	5	6	7	8	9		1	2	3	4	5	6	7	8	

Comments/Instructions:

Turn-around time is 15 business days unless otherwise specified.

Signature:	Print Name:	Company Name/Title:	Date:
RELINQUISHED BY:		MWH	
RECEIVED BY:			
RELINQUISHED BY:			
RECEIVED BY:			

For Lab Use Only: Sample Condition Upon Receipt:

ORIGINAL: Send with sample (sign only in blue or black ink) **COPIES: Retained by Sampler, Sent to Office**

MWH USE ONLY:

SW: Dissolved (1, 2, 7,8,9), Total (1,7,8) GW: Dissolved (2,3, 7,8,9), Total (2,3,7,8) MMW009: Dissolved (4,5,6,7,8,9), Total (4,5,6,7,8)

Figure 1-2
Example Chain-of-Custody Form
Southeast Idaho Mine Sites, P4 Production, LLC

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APPENDIX H

Laboratory Electronic Data Deliverable Format

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The Electronic Deliverable Format™ (EDF)

Version 1.2i

The Laboratory Electronic Deliverable Format™ (LAB EDF)

GUIDELINES & RESTRICTIONS

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APPENDIX I

Data Validation Report Templates

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Report# #######

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Southeast Idaho Mine Sites

Report Date: November 1, 2008

Matrix: Water

Parameters: Metals by ICPMS SW-846 Method 6020A

Validation Level: EPA Level IV

Laboratory: Microbac

Sample Delivery Group (SDG): 44433

Sample Identification	Collection Date	Laboratory Identification
TSB-GJ-08-10	9/15/08	44433-01
TSB-GJ-08-20	9/15/08	44433-02
TSB-GJ-08-30	9/15/08	44433-03
TSB-GJ-08-40	9/15/08	44433-04
TSB-GJ-08-10MS	9/15/08	44433-05
TSB-GJ-08-10MSD	9/15/08	44433-06

Introduction

This data review covers 6 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analysis was performed per the EPA SW 846 Method noted below:

- Method 6020A ICPMS: Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Niobium, Palladium, Phosphorus, Platinum, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Sulfur, Thallium, Tin, Titanium, Tungsten, Uranium, Vanadium, and Zinc, and Zirconium.

This review follows the specific guidance in the QAPP Addendum (MWH 2009) to the project SAP (April 2004) using the intent of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as applicable to the method stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Raw data were reviewed for a minimum of 10% of the Sample Delivery Groups (SDGs) or laboratory data package deliverables associated with this sampling event as specified in the QAPP Addendum. This package includes raw data review.

The following are definitions of the data qualifiers:

U The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

J The result is an estimated quantity. The associated numerical value is the approximated concentration of the analyte in the sample.

J+ The result is an estimated quantity, but the result may be biased high.

J- The result is an estimated quantity, but the result may be biased low.

R The result is unusable. The sample result is rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

UJ The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

The following are not data qualifiers but are provide for the purpose of evaluating the laboratory's performance:

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

The following "Reason Codes" will be applied as applicable to the validated data:

1 Holding Time
2 Sample Preservation (including receipt temperature)
3 Sample Custody
4 Missing Deliverable
5 ICPMS Tune
6 Initial Calibration
7 Initial Calibration Verification
8 Continuing Calibration Verification
9 Low-Level Calibration Check Sample
10 Calibration Blank
11 Laboratory or Preparation Blank
12 ICPMS or ICP Interference Check Standard
13 Laboratory Control Sample or Laboratory Control Sample Duplicate Recovery
14 Laboratory Control Sample Precision
15 Laboratory Duplicate Precision
16 Matrix Spike or Matrix Spike Duplicate Recovery
17 Matrix Spike/Matrix Spike Duplicate Precision
18 ICPMS or ICP Serial Dilution
19 ICPMS Internal Standard
20 Field Replicate Precision
21 Equipment Rinsate Blank
22 Linear Range Exceeded
23 Other reason

I(a). Deliverables and Chain-of-Custody Documentation

All deliverables were present and complete including the Case Narrative with full explanation of corrective actions and all package deliverables defined in the project SAP.

The chain-of-custodies were complete for sample identification, matrix, methods, preservation, dates and times of collection, dates and times of relinquishment and receipt. Any corrections preformed properly (i.e., crossed-out with a single line; correction visible, neat, and clear; and with initials of individual making correction).

I(b). Preservation and Holding Times

All technical holding time requirements were met: 6 months for water and soil (note NIST soil standard reference samples are valid for up to 3 years).

All samples were received intact with proper preservation (pH < 2 for water).

II. ICP-MS Tune Analysis

ICP MS Tuning was performed by the laboratory. All isotopes in the tuning solution mass resolution were within 0.1 amu.

The percent relative standard deviations (%RSD) of all isotopes in the tuning solution were less than or equal to 5.0%.

III. Calibration

An initial calibration was performed each day of analysis. The frequency and analysis criteria (90-110%) of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

The low-level initial calibration verification (LLICV) and low-level continuing calibration verifications (LLCCVs) standard frequency and limits (70-130%) were met. Limit for cobalt, manganese and zinc are 50 -150%. Only undetected data, or values < 2 x RL are qualified or impacted.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks with the following exceptions:

Method Blank ID	Analyte	Maximum Concentration	Associated Samples
ICB/CCB	Antimony Thallium Tungsten Vanadium Lithium	1.3 ug/L 1.1 ug/L 1.4 ug/L 2.7 ug/L 8.0 ug/L	All samples in SDG 44433

Method Blank ID	Analyte	Maximum Concentration	Associated Samples
	Mercury	0.1 ug/L	

Sample concentrations were compared to concentrations detected in the ICB/CCB/PBs per the National Functional Guidelines (and associated field results between the MDL and RL were flagged as U at the detected values). No samples were qualified with the following exceptions:

Sample	Analyte	Reported Concentration	Modified Final Concentration
TSB-GJ-08-10	Mercury	0.2 ug/L	0.2U ug/L
TSB-GJ-08-20	Thallium Tungsten	0.40 ug/L 0.70 ug/L	0.40U ug/L 0.70U ug/L
TSB-GJ-08-30	Lithium	10.0 ug/L	10.0U ug/L

Sample "RINSATE 1" (from SDG 4444120137) was identified as a rinsate. No metal contaminants were found in this blank with the following exceptions:

Rinsate ID	Sampling Date	Analyte	Concentration	Associated Samples
RINSATE 1	6/11/08	Calcium Iron Magnesium Manganese Silicon Sodium Strontium	131 ug/L 154 ug/L 17.9 ug/L 0.84 ug/L 38.6 ug/L 39.2 ug/L 1.5 ug/L	All samples in SDG 44433

Sample concentrations were compared to concentrations detected in the field blanks. No samples were qualified.

V. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

ICP interference check samples were reviewed for each analyte as applicable. Percent recovery (%R) of the ICSAB were within the QC limits of 80-120%.

VI. Laboratory Control Sample (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Spike amounts were reviewed and concentrations are noted to be at or near the mid-point of the calibration. Percent recoveries (%R) were within 80-120% with the following exceptions:

Spike ID (Associated Samples)	Analyte	LCS (%R) (Limits)	Flag	A or P
TSB-GJ-08-10LCS (All samples in SDG 44433)	Antimony Copper Silicon Vanadium Lithium Nickel Tungsten Zinc	55.2 (80-120) 72.5 (80-120) 65.4 (80-120) 68.4 (80-120) - - - -	J- (all detects) UJ (all non-detects)	A

All samples in the batch for the analytes having %Rs outside control limits were qualified as summarized above.

VII. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Relative percent differences (RPDs) were within the acceptance criteria of $\leq$ 20% for water or $\leq$ 35% for soil. For low level results, <5 x RL, a difference of $\pm$ 1 x RL is allowed for water and $\pm$ 2 x RL for soils.

VIII. Spike Sample Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Spike amounts were reviewed and concentrations are noted to be at or near the mid-point of the calibration. Percent recoveries (%R) were within 75-125% and relative percent differences (RPD) were within 20% limits with the following exceptions (qualification applies only if the spike value X 4 > sample result):

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
TSB-GJ-08-10MS/MSD (All samples in SDG 44433)	Sulfur Phosphorus	140.1 (75-125) 134.8 (75-125)	135.4 (75-125) -	- -	J+ (all detects) J+ (all detects)	A
TSB-GJ-08-10MS/MSD (All samples in SDG 44433)	Antimony Copper Silicon Vanadium Lithium Nickel Tungsten Zinc	55.2 (75-125) 72.5 (75-125) 65.4 (75-125) 68.4 (75-125) - - - -	39.4 (75-125) 60.9 (75-125) 44.6 (75-125) 56.0 (75-125) 69.8 (75-125) 71.1 (75-125) 60.6 (75-125) 62.2 (75-125)	- - - - - - - -	J- (all detects) UJ (all non-detects)	A
TSB-GJ-08-10MS/MSD (All samples in SDG 44433)	Niobium	40.6 (75-125)	29.7 (75-125)	-	J- (all detects) R (all non-detects)	A

Aluminum, calcium, iron, magnesium, manganese, strontium, and titanium results were outside the QC limits; results were not qualified since the original sample (TSB-GJ-08-10) was greater than 4X the spike amount.

A post-digestion spike was analyzed for any spike recovery outlier when the spike x 4 is greater than the sample result. For spike % R < 30% and post digest spike $\geq$ 75%, data

are qualified ‘J’ or ‘UJ’. For spike %R < 30% and post digest was < 75% or not reported, the ‘R’ matrix effect is verified for undetected data. The matrix spike qualifier ‘J’ is verified with consideration of significant low bias. No additional qualification is required for the post digest spike as data are already qualified for the matrix spike. If the post digest spike is not correlated (high or low) to the matrix spike, the difference is noted. If a post digest spike is not reported, the serial dilution may be used for further evaluation (see following section).

IX. ICP Serial Dilution

ICP serial dilution analysis was performed by the laboratory. The analysis criteria of ±10% difference for values greater than 50 times the lower limit of quantitation (i.e., the method detection limits [MDLs]) were met, with the following exceptions:

Sodium and Uranium results were outside the QC limits; data were not qualified since the concentration was less than 50 times the MDLs.

X. ICP-MS Internal Standards

All internal standard percent recoveries (%R) were within 70-130% or a 2x dilution was run with acceptable recoveries with the following exceptions:

Sample	Internal Standard	%R (Limits)	Analyte	Flag	A or P
TSB-GJ-08-20	Scandium-45	127.557 (70-130)	Silicon Strontium	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A
TSB-GJ-08-30	Scandium-45	129.653 (70-130)	Silicon Strontium	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A

XI. Field Replicates

Field replicate samples were collected in triplicate. Control limit(s) were not established in the SAP since the average of the replicate samples is used as the final value for the field location. Results of field replicate samples or other project samples were not qualified based on the precision of field replicate samples.

XII(a). Sample Result Verification

All sample result verifications were acceptable.

XII(b). Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

Metals - Data Qualification Summary - SDG 44433

SDG	Sample	Analyte	Flag	A or P	Reason
44433	TSB-GJ-08-10 TSB-GJ-08-20 TSB-GJ-08-30 TSB-GJ-08-40	Sulfur Phosphorus	J+ (all detects) J+ (all detects)	A	Matrix spike/Matrix spike duplicates (%R)
44433	TSB-GJ-08-10 TSB-GJ-08-20 TSB-GJ-08-30 TSB-GJ-08-40	Antimony Copper Silicon Vanadium Lithium Nickel Tungsten Zinc	J- (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicates (%R)
44433	TSB-GJ-08-10 TSB-GJ-08-20 TSB-GJ-08-30 TSB-GJ-08-40	Niobium	J- (all detects) R (all non-detects)	A	Matrix spike/Matrix spike duplicates (%R)
44433	TSB-GJ-08-20 TSB-GJ-08-30	Silicon Strontium	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A	Internal standards (%R)
44433	TSB-GJ-08-10 TSB-GJ-08-20 TSB-GJ-08-30 TSB-GJ-08-40	Iron	J (all detects)	A	ICP serial dilution (%D)

Metals - Laboratory Blank Data Qualification Summary - SDG 44433

SDG	Sample	Analyte	Modified Final Concentration	A or P
44433	TSB-GJ-08-10	Mercury	0.2U ug/L	A
44433	TSB-GJ-08-20	Thallium Tungsten	0.40U ug/L 0.70U ug/L	A
44433	TSB-GJ-08-30	Lithium	10.0U ug/L	A

Report# ########

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Southeast Idaho Mine Sites

Report Date: November 1, 2008

Matrix: Water

Parameters: Metals by ICP SW-846 Method 6010B

Validation Level: EPA Level IV

Laboratory: Microbac

Sample Delivery Group (SDG): 44433

Sample Identification	Collection Date	Laboratory Identification
TSB-GJ-08-10	9/15/08	44433-01
TSB-GJ-08-20	9/15/08	44433-02
TSB-GJ-08-30	9/15/08	44433-03
TSB-GJ-08-40	9/15/08	44433-04
TSB-GJ-08-10MS	9/15/08	44433-05
TSB-GJ-08-10MSD	9/15/08	44433-06

Introduction

This data review covers 6 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analysis was performed per the EPA SW 846 Method noted below:

- Method 6010B ICP: Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Niobium, Palladium, Phosphorus, Platinum, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Sulfur, Thallium, Tin, Titanium, Tungsten, Uranium, Vanadium, and Zinc, and Zirconium.

This review follows the specific guidance in the QAPP Addendum (MWH 2009) to the project SAP (April 2004) using the intent of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as applicable to the method stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Raw data were reviewed for a minimum of 10% of the Sample Delivery Groups (SDGs) or laboratory data package deliverables associated with this sampling event as specified in the QAPP Addendum. This package includes raw data review.

The following are definitions of the data qualifiers:

U The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

J The result is an estimated quantity. The associated numerical value is the approximated concentration of the analyte in the sample.

J+ The result is an estimated quantity, but the result may be biased high.

J- The result is an estimated quantity, but the result may be biased low.

R The result is unusable. The sample result is rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

UJ The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

The following are not data qualifiers but are provide for the purpose of evaluating the laboratory's performance:

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

The following "Reason Codes" will be applied as applicable to the validated data:

1 Holding Time
2 Sample Preservation (including receipt temperature)
3 Sample Custody
4 Missing Deliverable
5 ICPMS Tune
6 Initial Calibration
7 Initial Calibration Verification
8 Continuing Calibration Verification
9 Low-Level Calibration Check Sample
10 Calibration Blank
11 Laboratory or Preparation Blank
12 ICPMS or ICP Interference Check Standard
13 Laboratory Control Sample or Laboratory Control Sample Duplicate Recovery
14 Laboratory Control Sample Precision
15 Laboratory Duplicate Precision
16 Matrix Spike or Matrix Spike Duplicate Recovery
17 Matrix Spike/Matrix Spike Duplicate Precision
18 ICPMS or ICP Serial Dilution
19 ICPMS Internal Standard
20 Field Replicate Precision
21 Equipment Rinsate Blank
22 Linear Range Exceeded
23 Other reason

I(a). Deliverables and Chain-of-Custody Documentation

All deliverables were present and complete including the Case Narrative with full explanation of corrective actions and all package deliverables defined in the project SAP.

The chain-of-custodies were complete for sample identification, matrix, methods, preservation, dates and times of collection, dates and times of relinquishment and receipt. Any corrections preformed properly (i.e., crossed-out with a single line; correction visible, neat, and clear; and with initials of individual making correction).

I(b). Preservation and Holding Times

All technical holding time requirements were met: 6 months for water and soil (note NIST soil standard reference samples are valid for up to 3 years).

All samples were received intact with proper preservation (pH < 2 for water).

II. Calibration

An initial calibration was performed each day of analysis. The frequency and analysis criteria (90-110%) of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

The low-level initial calibration verification (LLICV) and low-level continuing calibration verifications (LLCCVs) standard frequency and limits (70-130%) were met. Limit for antimony, lead and thallium are 50 -150%. Only undetected data, or values < 2 x RL are qualified or impacted.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks with the following exceptions:

Method Blank ID	Analyte	Maximum Concentration	Associated Samples
ICB/CCB	Antimony Thallium Tungsten Vanadium Lithium Mercury	1.3 ug/L 1.1 ug/L 1.4 ug/L 2.7 ug/L 8.0 ug/L 0.1 ug/L	All samples in SDG 44433

Sample concentrations were compared to concentrations detected in the ICB/CCB/PBs per the National Functional Guidelines (and associated field results between the MDL and RL were flagged as U at the detected values). No samples were qualified with the following exceptions:

Sample	Analyte	Reported Concentration	Modified Final Concentration
TSB-GJ-08-10	Mercury	0.2 ug/L	0.2U ug/L
TSB-GJ-08-20	Thallium Tungsten	0.40 ug/L 0.70 ug/L	0.40U ug/L 0.70U ug/L
TSB-GJ-08-30	Lithium	10.0 ug/L	10.0U ug/L

Sample "RINSATE 1" (from SDG 4444120137) was identified as a rinsate. No metal contaminants were found in this blank with the following exceptions:

Rinsate ID	Sampling Date	Analyte	Concentration	Associated Samples
RINSATE 1	6/11/08	Calcium Iron Magnesium Manganese Silicon Sodium Strontium	131 ug/L 154 ug/L 17.9 ug/L 0.84 ug/L 38.6 ug/L 39.2 ug/L 1.5 ug/L	All samples in SDG 44433

Sample concentrations were compared to concentrations detected in the field blanks. No samples were qualified.

IV. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

ICP interference check samples were reviewed for each analyte as applicable. Percent recovery (%R) of the ICSAB were within the QC limits of 80-120%.

V. Laboratory Control Sample (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Spike amounts were reviewed and concentrations are noted to be at or near the mid-point of the calibration. Percent recoveries (%R) were within 80-120% with the following exceptions:

Spike ID (Associated Samples)	Analyte	LCS (%R) (Limits)	Flag	A or P
TSB-GJ-08-10LCS (All samples in SDG 44433)	Antimony Copper Silicon Vanadium Lithium Nickel Tungsten Zinc	55.2 (80-120) 72.5 (80-120) 65.4 (80-120) 68.4 (80-120) - - - -	J- (all detects) UJ (all non-detects)	A

All samples in the batch for the analytes having %Rs outside control limits were qualified as summarized above.

VI. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Relative percent differences (RPDs) were within the acceptance criteria of $\leq$ 20% and $\leq$ 35% for soils. For low level results, < 5 x RL, a difference of $\pm$ 1 x RL is allowed for water and $\pm$ 2 x RL for soils.

VII. Spike Sample Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Spike amounts were reviewed and concentrations are noted to be at or near the mid-point of the calibration. Percent recoveries (%R) were within 75-125% and relative percent differences (RPD) were within 20% limits (35% soils) with the following exceptions (qualification applies only if the spike value X 4 > sample result):

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
TSB-GJ-08-10MS/MSD (All samples in SDG 44433)	Sulfur Phosphorus	140.1 (75-125) 134.8 (75-125)	135.4 (75-125) -	- -	J+ (all detects) J+ (all detects)	A
TSB-GJ-08-10MS/MSD (All samples in SDG 44433)	Antimony Copper Silicon Vanadium Lithium Nickel Tungsten Zinc	55.2 (75-125) 72.5 (75-125) 65.4 (75-125) 68.4 (75-125) - - - -	39.4 (75-125) 60.9 (75-125) 44.6 (75-125) 56.0 (75-125) 69.8 (75-125) 71.1 (75-125) 60.6 (75-125) 62.2 (75-125)	- - - - - - - -	J- (all detects) UJ (all non-detects)	A
TSB-GJ-08-10MS/MSD (All samples in SDG 44433)	Niobium	40.6 (75-125)	29.7 (75-125)	-	J- (all detects) R (all non-detects)	A

Aluminum, calcium, iron, magnesium, manganese, strontium, and titanium results were outside the QC limits; results were not qualified since the original sample (TSB-GJ-08-10) was greater than 4X the spike amount.

A post-digestion spike was analyzed for any spike recovery outlier when the spike x 4 is greater than the sample result. For spike % R < 30% and post digest spike $\geq$ 75%, data are qualified 'J' or 'UJ'. For spike %R < 30% and post digest was < 75% or not reported, the 'R' matrix effect is verified for undetected data. The matrix spike qualifier 'J' is verified with consideration of significant low bias. No additional qualification is required for the post digest spike as data are already qualified for the matrix spike. If the post digest spike is not correlated (high or low) to the matrix spike, the difference is noted. If a post digest spike is not reported, the serial dilution may be used for further evaluation (see following section).

VIII. ICP Serial Dilution

ICP serial dilution analysis was performed by the laboratory. The analysis criteria of $\pm$10% difference for values greater than 50 times the lower limit of quantitation (i.e., the method detection limits [MDLs]) were met, with the following exceptions:

Sodium and Uranium results were outside the QC limits; data were not qualified since the concentration was less than 50 times the MDLs.

IX. Field Replicates

Field replicate samples were collected in triplicate. Control limit(s) were not established in the SAP since the average of the replicate samples is used as the final value for the field location. Results of field replicate samples or other project samples were not qualified based on the precision of field replicate samples.

X(a). Sample Result Verification

All sample result verifications were acceptable.

X(b). Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

Metals - Data Qualification Summary - SDG 44433

SDG	Sample	Analyte	Flag	A or P	Reason
44433	TSB-GJ-08-10 TSB-GJ-08-20 TSB-GJ-08-30 TSB-GJ-08-40	Sulfur Phosphorus	J+ (all detects) J+ (all detects)	A	Matrix spike/Matrix spike duplicates (%R)
44433	TSB-GJ-08-10 TSB-GJ-08-20 TSB-GJ-08-30 TSB-GJ-08-40	Antimony Copper Silicon Vanadium Lithium Nickel Tungsten Zinc	J- (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicates (%R)
44433	TSB-GJ-08-10 TSB-GJ-08-20 TSB-GJ-08-30 TSB-GJ-08-40	Niobium	J- (all detects) R (all non-detects)	A	Matrix spike/Matrix spike duplicates (%R)
44433	TSB-GJ-08-10 TSB-GJ-08-20 TSB-GJ-08-30 TSB-GJ-08-40	Iron	J (all detects)	A	ICP serial dilution (%D)

Metals - Laboratory Blank Data Qualification Summary - SDG 44433

SDG	Sample	Analyte	Modified Final Concentration	A or P
44433	TSB-GJ-08-10	Mercury	0.2U ug/L	A
44433	TSB-GJ-08-20	Thallium Tungsten	0.40U ug/L 0.70U ug/L	A
44433	TSB-GJ-08-30	Lithium	10.0U ug/L	A

Report# ########

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Southeast Idaho Mine Sites

Report Date: November 1, 2008

Matrix: Water

Parameters: Mercury by CVAA EPA Method 7470A

Validation Level: EPA Level IV

Laboratory: Microbac

Sample Delivery Group (SDG): 44433

Sample Identification	Collection Date	Laboratory Identification
TSB-GJ-08-10	5/12/08	44433-01
TSB-GJ-08-20	5/12/08	44433-02
TSB-GJ-08-30	5/12/08	44433-03
TSB-GJ-08-40	5/12/08	44433-04
TSB-GJ-08-10MS	5/12/08	44433-05

Introduction

This data review covers 6 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analysis was performed per the EPA Method noted below:

- Method 7470A: Mercury.

This review follows the specific guidance in the QAPP Addendum (MWH 2009) to the project SAP (April 2004) using the intent of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as applicable to the method stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Raw data were reviewed for a minimum of 10% of the Sample Delivery Groups (SDGs) or laboratory data package deliverables associated with this sampling event as specified in the QAPP Addendum. This package includes raw data review.

The following are definitions of the data qualifiers:

U The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

J The result is an estimated quantity. The associated numerical value is the approximated concentration of the analyte in the sample.

J+ The result is an estimated quantity, but the result may be biased high.

J- The result is an estimated quantity, but the result may be biased low.

R The result is unusable. The sample result is rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

UJ The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

The following are not data qualifiers but are provide for the purpose of evaluating the laboratory's performance:

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

The following “Reason Codes” will be applied as applicable to the validated data:

1 Holding Time
2 Sample Preservation (including receipt temperature)
3 Sample Custody
4 Missing Deliverable
5 ICPMS Tune
6 Initial Calibration
7 Initial Calibration Verification
8 Continuing Calibration Verification
9 Low-Level Calibration Check Sample
10 Calibration Blank
11 Laboratory or Preparation Blank
12 ICPMS or ICP Interference Check Standard
13 Laboratory Control Sample or Laboratory Control Sample Duplicate Recovery
14 Laboratory Control Sample Precision
15 Laboratory Duplicate Precision
16 Matrix Spike or Matrix Spike Duplicate Recovery
17 Matrix Spike/Matrix Spike Duplicate Precision
18 ICPMS or ICP Serial Dilution
19 ICPMS Internal Standard
20 Field Replicate Precision
21 Equipment Rinsate Blank
22 Linear Range Exceeded
23 Other reason

I(a). Deliverables and Chain-of-Custody Documentation

All deliverables were present and complete including the Case Narrative with full explanation of corrective actions and all package deliverables defined in the project SAP.

The chain-of-custodies were complete for sample identification, matrix, methods, preservation, dates and times of collection, dates and times of relinquishment and receipt. Any corrections preformed properly (i.e., crossed-out with a single line; correction visible, neat, and clear; and with initials of individual making correction).

I(b). Preservation and Holding Times

All technical holding time requirements (28 days) were met.

All samples were received intact with proper preservation (pH < 2 for water).

II. Calibration

An initial calibration was performed each day of analysis. The blank plus 4 standard curve produced a correlation coefficient of > 0.995. The frequency and analysis criteria (80-120%) of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

The low-level initial calibration verification (LLICV) and low-level continuing calibration verifications (LLCCVs) standard frequency and limits (70-130%) were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks with the following exceptions:

Method Blank ID	Analyte	Maximum Concentration	Associated Samples
ICB/CCB	Mercury	0.1 ug/L	All samples in SDG 44433

Sample concentrations were compared to concentrations detected in the ICB/CCB/PBs per the National Functional Guidelines (and associated field results between the MDL and RL were flagged as U at the detected values). No samples were qualified with the following exceptions:

Sample	Analyte	Reported Concentration	Modified Final Concentration
TSB-GJ-08-10	Mercury	0.2 ug/L	0.2U ug/L

Sample "RINSATE 1" (from SDG 4444120137) was identified as a rinsate. No metal contaminants were found in this blank. Association of results in rinsates samples to field samples and impact of concentrations detected in rinsate samples to field sample results are not addressed in this report, but will be assessed as part of a separate data usability assessment.

IV. Laboratory Control Sample (LCS)

Spike amounts were reviewed and concentrations are noted to be at or near the mid-point of the calibration. Percent recoveries (%R) were within 80-120% with the following exceptions:

Spike ID (Associated Samples)	Analyte	LCS (%R) (Limits)	Flag	A or P
TSB-GJ-08-10LCS (All samples in SDG 44433)	Mercury	125.2 (80-120) -	J+ (all detects) UJ (all non-detects)	A

All samples in the batch for the analytes having %Rs outside control limits were qualified as summarized above.

V. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Relative percent differences (RPDs) were within the acceptance criteria of $\leq$ 20% for water or $\leq$ 35% for soil. For low level results, <5 x RL, a difference of $\pm$ 1 x RL is allowed for water and $\pm$ 2 x RL for soils.

VI. Spike Sample Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Spike amounts were reviewed and concentrations are noted to be at or near the mid-point of the calibration. Percent recoveries (%R) were within 75-125% and relative percent differences (RPD) were within 20% limits with the following exceptions (qualification applies only if the spike value times 4 > sample result):

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
TSB-GJ-08-10MS/MSD (All samples in SDG 44433)	Mercury	140.1 (75-125)	135.4 (75-125)	-	J+ (all detects)	A

VII. Field Replicates

Field replicate samples were collected in triplicate. Control limit(s) were not established in the SAP since the average of the replicate samples is used as the final value for the field location. Results of field replicate samples or other project samples were not qualified

based on the precision of field replicate samples.

VIII(a). Sample Result Verification

All sample result verifications were acceptable.

VIII(b). Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

Metals - Data Qualification Summary - SDG 44433

SDG	Sample	Analyte	Flag	A or P	Reason
44433	TSB-GJ-08-10 TSB-GJ-08-20 TSB-GJ-08-30 TSB-GJ-08-40	Mercury	J+ (all detects)	A	Matrix spike/Matrix spike duplicates (%R)
44433	TSB-GJ-08-10 TSB-GJ-08-20 TSB-GJ-08-30 TSB-GJ-08-40	Mercury	J+ (all detects)	A	Laboratory control sample (%R)

Metals - Laboratory Blank Data Qualification Summary - SDG 44433

SDG	Sample	Analyte	Modified Final Concentration	A or P
44433	TSB-GJ-08-10	Mercury	0.2U ug/L	A

Report# #######

Data Validation Company Name
Data Validation Report

Project/Site Name: Southeast Idaho Mine Sites.

Report Date: November 1, 2008

Matrix: Water

Parameters: Major Anions by Ion Chromatography (IC) EPA Method 300.0

Validation Level: EPA Level IV

Laboratory: Laboratory Name

Sample Delivery Group (SDG): 44433

Sample Identification	Collection Date	Laboratory Identification
TSB-GJ-08-10	9/15/08	44433-01
TSB-GJ-08-20	9/15/08	44433-02
TSB-GJ-08-30	9/15/08	44433-03
TSB-GJ-08-40	9/15/08	44433-04
TSB-GJ-08-10MS	9/15/08	44433-05

Introduction

This data review covers 6 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analysis was performed per the EPA Method noted below:

- Method 300.0: Chloride.

This review follows the specific guidance in the QAPP Addendum (MWH 2009) to the project SAP (April 2004) using the intent of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as applicable to the method stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Raw data were reviewed for a minimum of 10% of the Sample Delivery Groups (SDGs) or laboratory data package deliverables associated with this sampling event as specified in the QAPP Addendum. This package includes raw data review.

The following are definitions of the data qualifiers:

U The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

J The result is an estimated quantity. The associated numerical value is the approximated concentration of the analyte in the sample.

J+ The result is an estimated quantity, but the result may be biased high.

J- The result is an estimated quantity, but the result may be biased low.

R The result is unusable. The sample result is rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

UJ The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

The following are not data qualifiers but are provide for the purpose of evaluating the laboratory's performance:

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

The following "Reason Codes" will be applied as applicable to the validated data:

1 Holding Time
2 Sample Preservation (including receipt temperature)
3 Sample Custody
4 Missing Deliverable
5 ICPMS Tune
6 Initial Calibration
7 Initial Calibration Verification
8 Continuing Calibration Verification
9 Low-Level Calibration Check Sample
10 Calibration Blank
11 Laboratory or Preparation Blank
12 ICPMS or ICP Interference Check Standard
13 Laboratory Control Sample or Laboratory Control Sample Duplicate Recovery
14 Laboratory Control Sample Precision
15 Laboratory Duplicate Precision
16 Matrix Spike or Matrix Spike Duplicate Recovery
17 Matrix Spike/Matrix Spike Duplicate Precision
18 ICPMS or ICP Serial Dilution
19 ICPMS Internal Standard
20 Field Replicate Precision
21 Equipment Rinsate Blank
22 Linear Range Exceeded
23 Other reason

I(a). Deliverables and Chain-of-Custody Documentation

All deliverables were present and complete including the Case Narrative with full explanation of corrective actions and all package deliverables defined in the project SAP.

The chain-of-custodies were complete for sample identification, matrix, methods, preservation, dates and times of collection, dates and times of relinquishment and receipt. Any corrections preformed properly (i.e., crossed-out with a single line; correction visible, neat, and clear; and with initials of individual making correction).

I(b). Preservation and Holding Times

All technical holding time requirements (28 days) were met.

All samples were received intact (no preservation required).

II. Calibration

An initial calibration was performed each day of analysis. The blank plus 5 standard curve produced a correlation coefficient of > 0.995. The frequency and analysis criteria (90-110%) of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks with the following exceptions:

Method Blank ID	Analyte	Maximum Concentration	Associated Samples
ICB/CCB	Chloride	0.2 mg/L	All samples in SDG 44433

Sample concentrations were compared to concentrations detected in the ICB/CCB/PBs per the National Functional Guidelines (and associated field results between the MDL and RL were flagged as U at the detected values). No samples were qualified with the following exceptions:

Sample	Analyte	Reported Concentration	Modified Final Concentration
TSB-GJ-08-10	Chloride	0.21 mg/L	0.21U mg/L

Sample "RINSATE 1" (from SDG 4444120137) was identified as a rinsate. Major anions were not found in this blank, so associated field samples did not require qualification.

IV. Laboratory Control Sample (LCS)

Spike amounts were reviewed and concentrations are noted to be at or near the mid-point of the calibration. Percent recoveries (%R) were within 80-120% with the following exceptions:

Spike ID (Associated Samples)	Analyte	LCS (%R) (Limits)	Flag	A or P
TSB-GJ-08-10LCS (All samples in SDG 44433)	Chloride	125.2 (80-120) -	J+ (all detects) UJ (all non-detects)	A

All samples in the batch for the analytes having %Rs outside control limits were qualified as summarized above.

V. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Relative percent differences (RPDs) were within the acceptance criteria of $\leq$ 20% for water or $\leq$ 35% for soil. For low level results, <5 x RL, a difference of $\pm$ 1 x RL is allowed for water and $\pm$ 2 x RL for soils.

VI. Spike Sample Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Spike amounts were reviewed and concentrations are noted to be at or near the mid-point of the calibration. Percent recoveries (%R) were within 75-125% and relative percent differences (RPD) were within 20% limits with the following exceptions:

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
TSB-GJ-08-10MS/MSD (All samples in SDG 44433)	Chloride	140.1 (75-125)	135.4 (75-125)	-	J+ (all detects)	A

VII. Field Replicates

Field replicate samples were collected in triplicate. Control limit(s) were not established in the SAP since the average of the replicate samples is used as the final value for the field location. Results of field replicate samples or other project samples were not qualified based on the precision of field replicate samples.

VIII(a). Sample Result Verification

All sample result verifications were acceptable.

VIII(b). Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

Metals - Data Qualification Summary - SDG 44433

SDG	Sample	Analyte	Flag	A or P	Reason
44433	TSB-GJ-08-10 TSB-GJ-08-20 TSB-GJ-08-30 TSB-GJ-08-40	Chloride	J+ (all detects)	A	Matrix spike/Matrix spike duplicates (%R)
44433	TSB-GJ-08-10 TSB-GJ-08-20 TSB-GJ-08-30 TSB-GJ-08-40	Chloride	J+ (all detects)	A	Laboratory control sample (%R)

Metals - Laboratory Blank Data Qualification Summary - SDG 44433

SDG	Sample	Analyte	Modified Final Concentration	A or P
44433	TSB-GJ-08-10	Chloride	0.21 mg/L	A

Report# #######

Data Validation Company Name
Data Validation Report

Project/Site Name: Southeast Idaho Mine Sites

Report Date: November 1, 2008

Matrix: Water

Parameters: Gross Alpha and Gross Beta by Method 900.0
Gas Flow Proportional Counting System (GFPC)

Validation Level: EPA Level IV

Laboratory: Laboratory Name

Sample Delivery Group (SDG): L55555

Field Sample Identification	Date Collected	Laboratory Sample Identification
091207GWMST049-1-U	9/15/2008	L55555-01
091207GWMST049-2-U	9/15/2008	L55555-03
091207GWMST049-3-U	9/15/2008	L55555-05
091207GWMST049-B-U	9/15/2008	L55555-07
091207GWMST049-EQ-U	9/15/2008	L55555-09

Introduction

This data review covers 5 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analysis was performed per the EPA Method noted below:

- Method 900.0: Gross Alpha and Gross Beta.

This review follows the specific guidance in the QAPP Addendum (MWH 2009) to the project SAP (April 2004) using the intent of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as applicable to the method stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Raw data were reviewed for a minimum of 10% of the Sample Delivery Groups (SDGs) or laboratory data package deliverables associated with this sampling event as specified in the QAPP Addendum. This package includes raw data review.

The following are definitions of the data qualifiers:

U The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

J The result is an estimated quantity. The associated numerical value is the approximated concentration of the analyte in the sample.

J+ The result is an estimated quantity, but the result may be biased high.

J- The result is an estimated quantity, but the result may be biased low.

R The result is unusable. The sample result is rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

UJ The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

The following are not data qualifiers but are provide for the purpose of evaluating the laboratory's performance:

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

The following "Reason Codes" will be applied as applicable to the validated data:

1 Holding Time
2 Sample Preservation (including receipt temperature)

3 Sample Custody
4 Missing Deliverable
5 - not applicable to this method -
6 Initial Calibration
7 (not applicable to this method)
8 Continuing Calibration Verification
9 - not applicable to this method -
10 - not applicable to this method -
11 Laboratory or Preparation Blank
12 - not applicable to this method -
13 Laboratory Control Sample or Laboratory Control Sample Duplicate Recovery
14 Laboratory Control Sample Precision
15 Laboratory Duplicate Precision
16 Matrix Spike or Matrix Spike Duplicate Recovery
17 Matrix Spike/Matrix Spike Duplicate Precision
18 - not applicable to this method –
19 - not applicable to this method -
20 Field Replicate Precision
21 Equipment Rinsate Blank
22 Linear Range Exceeded
23 Other reason
24 Result is less than the MDC
25 Result is less than two times the error

I. Chain-of-Custody Procedure, Sample Preservation, and Holding Time

_X__ Signatures on chain(s) and all samples accounted for
_X__ Gross alpha and beta: preserved with nitric acid to pH < 2; 6-month holding time (if preserved)

A total of three groundwater samples and two field blank samples were collected on September 15, 2008 in preserved containers. Samples were shipped and arrived at the laboratory on September 16, 2008. Sample chain-of-custody and laboratory receipt documentation appear intact. The samples were analyzed within the 6-month holding time on September 26, 2008, 11 days from collection to analysis.

II. Instrument Calibration

_X__ Confirm dates of calibration, detectors IDs, geometry, counting times, number of counts for each standard, measured activity for all standards, identity and true value of all standards
_X__ Confirm matrix used in geometry standard
_X__ Evidence of decay correction of standard prior to calculation of efficiencies, as appropriate
_X__ Calibration points including efficiencies for each detector
_X__ Background checks performed at the time of initial calibration
_X__ Self absorption curves for each detector, covering an appropriate range of residue masses
_X__ Alpha-beta cross talk values and voltage plateaus (if needed)
_X__ Certificates for NBS- or NIST-traceable standards
_X__ Review standard preparation and dilution logs for accuracy

Initial calibration data were within all required criteria.

III. Calibration Verification

_X__ Tolerance chart or statistical control chart of the appropriate efficiencies and background activities (at least 20 points) with ± 2 sigma error (warning) and ± 3 sigma error (failure) limits
_X__ Routine (daily, weekly, monthly) background checks for each detector
_X__ Daily efficiency checks for each detector
_X__ Evidence of decay correction of standard prior to calculation of efficiencies, as appropriate
_X__ Confirm detector IDs and geometries used in analysis
_X__ Check if sample residues are within the range of the self absorption curve

Calibration verification data were within all required criteria.

IV. Target Compound Identification and Quantitation

_X___ Confirm all samples less than MDC are qualified not detected (U)
_X___ Less than two times the uncertainty (2 sigma error) were reported by the laboratory as not detected

Sample results that were reported as values less than the MDC were qualified as not detected at the MDC (flagged U). Sample results that were less than two times the error were qualified as not detected at the MDC (flagged U) or qualified as not detected at the reported concentration (flagged U). The following results were qualified:

Field Sample Identification	Laboratory Sample ID	Parameter	Result (pCi/L)	MDC (pCi/L)	2*Error	Data Validation Result	Reason Code
091207GWMST049-1-U	L55555-01	Gross Alpha	3.6	2.0	3.8	3.6 UJ	25
091207GWMST049-1-U	L55555-01	Gross Beta	0.24	4.0	2.4	4.0 UJ	24

V. Blanks

_X___ Confirm method blank results < MDC
If method blank result is ≥ MDC:
If sample result is > 5X the concentration of the method blank, then no action.
If sample result is ≤ 5X the concentration of the method blank, then U at detected value.

Gross Alpha and Gross Beta were not detected in the method blank above their MDCs.

VI. Laboratory Duplicates

_X___ Confirm laboratory duplicate analyzed for each batch or for every 20 samples
_X___ Confirm that the DER ≤ 1.42 or RPD ≤ 20
Where the duplicate (or replicate) error ratio (DER) =

$$\frac{\left|([\text{Sample}] - [\text{Duplicate}])\right|}{([2\ \text{sigma error}^2_{\text{Sample}}] + [2\ \text{sigma error}^2_{\text{Duplicate}}])^{1/2}}$$

_____ If DER > 1.42, qualify sample J
_____ If RPD > 20 and result(s) ≥ 5x MDC, then qualify J. If result(s) < 5x MDC, then calculate absolute difference. If absolute difference is within ± MDC (water) or ± 2x MDC (soil), then no action; if > ± MDC (water) or ± 2x MDC (soil), then qualify sample J.

All DERs are less than 1.42 (or RPDs less than 20) for Gross Alpha and Gross Beta.

VII. Laboratory Control Samples

_X___ Must be analyzed for each batch or for every 20 samples
_X___ Compare %R for Gross Alpha with lab control limits (75-125%)
_X___ Compare %R for Gross Beta with lab control limits (75-125%)

Recoveries for Gross Alpha and Gross Beta in each laboratory control sample were within control limits.

VIII. Matrix Spike Samples

_X___ Must be analyzed for each batch or for every 20 samples
_X___ Compare %R for Gross Alpha with lab control limits (65-135%)
_X___ Compare %R for Gross Beta with lab control limits (65-135%)

Recoveries for Gross Alpha and Gross Beta in each matrix spike sample were within control limits.

IX. Equipment and Water Blank Samples

One equipment blank and one water blank were collected on September 15, 2008 for Gross Alpha and Gross Beta analysis. Gross Alpha and Gross Beta were not detected in any of the field blank samples.

X. Overall Assessment of Data

With the following exceptions, all quality control data associated with the field samples were within control limits. All other field results are usable as reported by the laboratory.

Summary of Qualified Data:

Field Sample Identification	Laboratory Sample ID	Parameter	Result (pCi/L)	Data Validation Result	Reason Code
091207GWMST049-1-U	L55555-01	Gross Alpha	3.6	3.6 UJ	25
091207GWMST049-1-U	L55555-01	Gross Beta	0.24	4.0 UJ	24

APPENDIX J

Correspondance with Agencies/Tribes

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STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

444 Hospital Way, #300 • Pocatello, Idaho 83201 • (208) 236-6160

C.L. "Butch" Otter, Governor
Toni Hardesty, Director

21 November 2008

Mr. Barry Koch
Special Projects Lead - Mining
P4 Production, LLC
PO Box 816
Soda Springs, ID 83276-0816

Re: *Quality Assurance Project Plan Addendum, Revision 0*, 22 October 2008

Dear Mr. Koch,

The Agencies and Tribes have reviewed the *Quality Assurance Project Plan Addendum, Revision 0*, 22 October 2008. The referenced document responds to a Notice of Deficiency dated 30 June 2008 and describes changes and updates to the analytical program and field quality control (QC) sampling requirements that are necessary to correct deficiencies. In general, we found that the Quality Assurance Project Plan (QAPP) addendum provides analytical specifications that are comprehensive and provide for data of known quality. Additionally, the QAPP addendum provides direction consistent with the conversations and agreements made during the 20 August 2008 meeting. Comments to help finalize the document are attached.

Note that other comments on analysis and validation of future data are being addressed through other avenues. The comment on spiked quality control procedures made in regard to the *Technical Memorandum Addressing Re-Validation and Validation of Historical Data and Future Laboratory and Data Validation Requirements, Southeast Idaho Mine Sites*, 10 October 2008, is expected to be resolved shortly. Additionally, only general comments are offered here on radiological chemistry. A more detailed radiological chemistry section has yet to be reviewed by the Agencies and Tribes, but is expected to be in the near future. For example, analytical specification tables and data validation templates are needed and will be part of a radiological chemistry supplement to the QAPP addendum.

The *Quality Assurance Project Plan Addendum, Revision 0*, 22 October 2008, is considered a deliverable under the CO/AOC, and per Section 9.7 of the CO/AOC, "Within thirty (30) days of P4's receipt of the comment from IDEQ on each draft document, P4 shall amend and submit a revised document to IDEQ that incorporates all comments and corrects all deficiencies identified by IDEQ, unless such comments have

been revised or withdrawn in writing." However, our new process calls for a meeting or conference call to discuss any questions or issues P4/Monsanto has with the Agency/Tribal comments. Please contact me within no later than 28 November 2008 to set up a call.

The CO/AOC clearly states that all deliverables shall be submitted in draft form, and are subject to review, comment, and written approval or disapproval by IDEQ. For each draft document, P4/Monsanto shall amend and submit a revised document to IDEQ that incorporates all comments and corrects all deficiencies. Should P4/Monsanto decide not to comply with the comments provided by IDEQ on behalf of all the Agencies and Tribes, discussions to resolve those issues should be initiated. However, after the Agencies and Tribes have reviewed P4/Monsanto's position and issued instructions to P4/Monsanto to incorporate the original comments, P4/Monsanto must comply or initiate dispute resolution. Future deliverables will be deemed deficient and disapproved should P4/Monsanto fail to comply with the CO/AOC regarding incorporation of Agency/Tribal comments and stipulated penalties may be initiated from the date the revised deliverable was due.

The Agencies and Tribes are anxious to finalize this document. Please let me know if you have any questions.

Sincerely,

Mike Rowe

Mike Rowe
Regional Mining Project Manager

cc: Robert Geddes (P4/Monsanto)
Bill Wright (MWH)
Doug Tanner, Bruce Olenick (IDEQ)
Jeff Jones, Mary Kauffman, Will Frymire (C-TNF)
Jason Sturm (BLM)
Allen Ruberry (IDL)
Kelly Wright (Shoshone-Bannock Tribes)
Sandi Arena (USFWS)
Dave Tomten (EPA)
Bill Wiley (BIA)
File copy/Monsanto/Correspondence

Agencies and Tribes Comments on
Quality Assurance Project Plan Addendum, Revision 0, 22 October 2008
21 November 2008

General Comments

0-A. Please include all Agency/Tribal comments and P4/Monsanto responses to resolve those comments in the next version of the document (e.g., in an appendix).

0-B. Please identify any significant language added to the next version of the document. All new language in a document will be highlighted except for those minor editorial changes (e.g., does not change the meaning of the sentence, paragraph, etc., or provides no additional information) identified by the Agencies and Tribes in their comments or - subsequently by P4/Monsanto upon further review of the document.

0-C. Cover Sheet and Title Page: Please delete the extraneous title "Southeast Idaho Mine-Specific Selenium Program" from the cover sheet and title page of this report. This report is a deliverable as required under the Administrative Order on Consent (08/20/2003), EPA Docket No. CERCLA-10-2003-0117 rather than a document generated for a P4/Monsanto Selenium Program, as the title implies.

0-D. Please add the following language in 1.0 Introduction. The QAPP Addendum is being submitted as a deliverable for work under the Consent Order/Administrative Order on Consent for the Performance of Site Investigations and Engineering Evaluations/Cost Analysis (EE/CAs) at P4 Production, L.L.C. Phosphate Mine Sites in Southeastern Idaho (08/20/03), EPA Docket No. CERCLA-10-2003-0117.

0-E. Organizational changes have been made to the personnel responsible for various duties in association with this Plan. The Agencies and Tribes recommend P4/Monsanto provides supporting documentation of the qualifications of individuals now assigned to this Plan in their new positions.

0-F. The addendum should specify that the Data Quality Objectives (DQO) process will be implemented on a task specific basis, prior to the start of each task. The DQO will provide for additional specifications as needed. (The DQO process should also consider specifying spike levels/procedures as provided in our previous written and verbal review comments on *Technical Memorandum Addressing Re-Validation and Validation of Historical Data and Future Laboratory and Data Validation Requirements, Southeast Idaho Mine Sites, prepared for P4 Production by MWH, October 10, 2008.*)

0-G. Section 6.2.2 of the Program Field Sampling Plan states that QA/QC samples will be taken at a minimum of 10% of the total stations. One of the 3 primary replicate samples will be used for the matrix spike analysis. The Program QAP also indicates that triplicate samples will be taken at all QA stations. As part of the new protocol introduced by the QAPP addendum, representative samples to be used for MS/MSD need to be

collected in the field. It should be clarified that the field sample personnel collect extra volume and designate (on the chains of custody) the samples to be used for the MS/MSD or MD. These samples should be representative of the general matrix of the current day's sampling or event sampling. This will ensure that the spike recoveries give useful and representative biases should qualifiers need to be applied. Field rinse blanks are not to be used for QC. Will the current FSP and QAPP be sufficient to account for this additional step in the collection of field samples? If not, please revise accordingly.

Specific Comments

0-1. Page ii, Acronyms: Please indicate that CLP and NFG are associated with US EPA.

0-2. Page 1-1, Section 1.2, Paragraph 2, Line 3: The text states "...has been approved by the Agencies/Tribes to samples collected in support..." The sentence is incomplete. Please correct.

0-3. Page 1-1, Section 1.2, Paragraph 3: It might be clearer to state that you are using a QA certified laboratory, but that the split sample program has been discontinued.

0-4. Page 1-2, Section 1.6.4: Please clarify that this Addendum relates only to the metals analysis and could also relate to wet chemistry. For example, the radiological chemistry criteria are not being addressed now, but will be in the near future.

0-5. Page 1-2 and 2-3, Sections 1.6.4 and 2.7.2: Please explain how you will determine the 10% of the samples for which the Level 4 data package will be provided. The A/T suggest that the minimum number of data packages be chosen to contain the 10% of the samples. If there are particular sites of interest, it would be useful to choose those for the full raw data review.

0-6. Page 1-2, Section 1.6.4, Paragraph 2, Line 1: The text states "The hard copy deliverable...will issued in one of two formats..." The sentence is incomplete. Please correct.

0-7. Page 1-2, Section 1.6.4.1, Bullet 5: Please include that this form comprises the preparation blanks as well as calibration blanks.

0-8. Page 1-2, Section 1.6.4.1, Bullet 7: Please add under this bullet the MSD %R if it is performed and, if so, the MS/MSD RPD.

0-9. Page 2-1, Section 2.3.1: Eliminate "semi-annual" as sampling may be more or less often.

0-10. Page 2-2, Section 2.4.2, Paragraph 1 (incomplete): The first complete sentence states that "With the exception of arsenic and molybdenum, the reporting limit for each monitoring parameter is less than the lowest screening level for that parameter." The text

goes on to state, "The reporting limit of .001 milligrams per liter (mg/L) and the MDL of 0.00025 mg/L are greater than the lowest screening level of 0.000045 mg/L; however, there is no other commercially-available analytical method with greater sensitivity for lead." Please clarify this sentence that discusses lead when the analytes under discussion in this section are arsenic and molybdenum.

0-11. Page 2-2, Section 2.6.2.2: Gross alpha/ beta are noted here. It is technically a GPC – gas proportional counter. The forms section will have other requirements for alpha/beta like the efficiency and MDCs not MDLs. There would then need to be a 1.6.4.4 for the GPC reporting elements. This issue can be addressed now or as part of the radiological chemistry section supplement.

0-12. Page 2-3, Section 2.7.2, Paragraph 1: A check of the PgmQAP did not show an Appendix I; the last appendix was Appendix G. Please clarify.

0-13. Page 2-3, Section 2.7.2, Paragraph 2, Line 5: There should probably be the word *be* between *will* and *addressing* to read ". . . and this will be addressing the NFG assessment . . ."

0-14. Page 2-4, Section 2.7.2, Reason Codes: When radiological chemistry is included, there will need to be the rad codes per the DOE document unless you are using adaptations of these codes to the ones you have noted in the LDC format.

0-15. Page 2-4, Section 2.7.2, Reason Codes: Please explain why there is no specific reason code for negative blanks, which would be a low bias, not a high bias qualifier.

0-16. Page 2-5, Section 2.7.4: The edd format does not cover the rad reporting, specifically for the efficiencies; it is not readily apparent in the field definitions. This issue can be addressed now or as part of the radiological chemistry section supplement.

0-17. Table 2-6: Please explain why the table only has state groundwater quality standards and not both state groundwater and surface water standards? Why is there no state standard listed for cadmium or selenium. Please include or explain why the surface water standards and groundwater standards for Cd and Se are absent.

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Response to
Agencies and Tribes Comments on
***Quality Assurance Project Plan Addendum, Revision 0*, 22 October 2008**
21 November 2008

Comments received: November 21, 2008
Responses submitted: February 9, 2009

General Comments

0-A. Please include all Agency/Tribal comments and P4/Monsanto responses to resolve those comments in the next version of the document (e.g., in an appendix).

Response: *Agency/Tribal comments and these responses to comments have been added to new Appendix J of the QAPP Addendum.*

0-B. Please identify any significant language added to the next version of the document. All new language in a document will be highlighted except for those minor editorial changes (e.g., does not change the meaning of the sentence, paragraph, etc., or provides no additional information) identified by the Agencies and Tribes in their comments or -subsequently by P4/Monsanto upon further review of the document.

Response: *With the exception of minor editorial and formatting changes, the changes to Revision 1 of this document are presented in redline/strikeout format.*

0-C. Cover Sheet and Title Page: Please delete the extraneous title "Southeast Idaho Mine-Specific Selenium Program" from the cover sheet and title page of this report. This report is a deliverable as required under the Administrative Order on Consent (08/20/2003), EPA Docket No. CERCLA-10-2003-0117 rather than a document generated for a P4/Monsanto Selenium Program, as the title implies.

Response: *"Southeast Idaho Mine-Specific Selenium Program" has been deleted from the Cover Sheet and Title Page as requested.*

0-D. Please add the following language in 1.0 Introduction. The QAPP Addendum is being submitted as a deliverable for work under the Consent Order/Administrative Order on Consent for the Performance of Site Investigations and Engineering Evaluations/Cost Analysis (EE/CAs) at P4 Production, L.L.C. Phosphate Mine Sites in Southeastern Idaho (08/20/03), EPA Docket No. CERCLA-10-2003-0117.

Response: *The language has been added as requested.*

0-E. Organizational changes have been made to the personnel responsible for various duties in association with this Plan. The Agencies and Tribes recommend P4/Monsanto provides supporting documentation of the qualifications of individuals now assigned to this Plan in their new positions.

Response: *This supporting documentation is provided as Attachment A to these responses to comments.*

0-F. The addendum should specify that the Data Quality Objectives (DQO) process will be implemented on a task specific basis, prior to the start of each task. The DQO will provide for additional specifications as needed. (The DQO process should also consider specifying spike levels/procedures as provided in our previous written and verbal review comments on *Technical Memorandum Addressing Re-Validation and Validation of Historical Data and Future Laboratory and Data Validation Requirements, Southeast Idaho Mine Sites, prepared for P4 Production by MWH, October 10, 2008*.)

Response: *Sections 1.4.2 and 1.4.4.2 were added to address this comment.*

0-G. Section 6.2.2 of the Program Field Sampling Plan states that QA/QC samples will be taken at a minimum of 10% of the total stations. One of the 3 primary replicate samples will be used for the matrix spike analysis. The Program QAP also indicates that triplicate samples will be taken at all QA stations. As part of the new protocol introduced by the QAPP addendum, representative samples to be used for MS/MSD need to be collected in the field. It should be clarified that the field sample personnel collect extra volume and designate (on the chains of custody) the samples to be used for the MS/MSD or MD. These samples should be representative of the general matrix of the current day's sampling or event sampling. This will ensure that the spike recoveries give useful and representative biases should qualifiers need to be applied. Field rinse blanks are not to be used for QC. Will the current FSP and QAPP be sufficient to account for this additional step in the collection of field samples? If not, please revise accordingly.

Response: *Section 2.5.1.3 was added to address this comment. P4 Monsanto feels this documentation will be sufficient to ensure that the procedure is incorporated. Additionally, these procedures will be reviewed as part of any field kick-off meeting. Kick-off meetings will be conducted at least one week prior to field sampling.*

Specific Comments

0-1. Page ii, Acronyms: Please indicate that CLP and NFG are associated with US EPA.

Response: *USEPA was added to the acronym name.*

0-2. Page 1-1, Section 1.2, Paragraph 2, Line 3: The text states "…has been approved by the Agencies/Tribes to samples collected in support…" The sentence is incomplete. Please correct.

Response: *The missing word "validate" was added to the sentence.*

0-3. Page 1-1, Section 1.2, Paragraph 3: It might be clearer to state that you are using a QA certified laboratory, but that the split sample program has been discontinued.

Response: *The sentence was revised to: "Collection of Quality Assurance (QA) split samples and use of a QA laboratory have been discontinued."*

0-4. Page 1-2, Section 1.6.4: Please clarify that this Addendum relates only to the metals analysis and could also relate to wet chemistry. For example, the radiological chemistry criteria are not being addressed now, but will be in the near future.

Response: *A new section (Section 1.6.4.3) has been added to address radiological specifications for gross alpha and beta analysis (EPA Method 900.0). Deliverable items identified in Section 1.6.4.3 have been moved to new Section 1.6.4.4, and radiological reporting requirements have been added to Section 1.6.4.3.*

0-5. Page 1-2 and 2-3, Sections 1.6.4 and 2.7.2: Please explain how you will determine the 10% of the samples for which the Level 4 data package will be provided. The A/T suggest that the minimum number of data packages be chosen to contain the 10% of the samples. If there are particular sites of interest, it would be useful to choose those for the full raw data review.

Response: *Section 1.6.4 has been revised to state, "Level 4 data packages will be requested for one out of every five data packages produced (with a minimum of one Level 4 package for each field event). The 10 percent of samples will be randomly selected from those data packages." Section 2.7.2 references this section and restates the requirement.*

0-6. Page 1-2, Section 1.6.4, Paragraph 2, Line 1: The text states "The hard copy deliverable…will issued in one of two formats…" The sentence is incomplete. Please correct.

Response: *The missing word "be" was added to the sentence.*

0-7. Page 1-2, Section 1.6.4.1, Bullet 5: Please include that this form comprises the preparation blanks as well as calibration blanks.

Response: *The preparation blanks have been included in the list for this form.*

0-8. Page 1-2, Section 1.6.4.1, Bullet 7: Please add under this bullet the MSD %R if it is performed and, if so, the MS/MSD RPD.

Response: *Text for bullet 7 was revised as follows: "Matrix spike and matrix spike duplicate (MS/MSD) sample recovery and MS/MSD relative percent difference (RPD) (Form VA-IN)."*

0-9. Page 2-1, Section 2.3.1: Eliminate "semi-annual" as sampling may be more or less often.

Response: *"Semi-annual" has been deleted as requested.*

0-10. Page 2-2, Section 2.4.2, Paragraph 1 (incomplete): The first complete sentence states that "With the exception of arsenic and molybdenum, the reporting limit for each monitoring parameter is less than the lowest screening level for that parameter." The text goes on to state, "The reporting limit of .001 milligrams per liter (mg/L) and the MDL of 0.00025 mg/L are greater than the lowest screening level of 0.000045 mg/L; however, there is no other commercially-available analytical method with greater sensitivity for lead." Please clarify this sentence that discusses lead when the analytes under discussion in this section are arsenic and molybdenum.

Response: *The word "lead" has been replaced by "arsenic."*

0-11. Page 2-2, Section 2.6.2.2: Gross alpha/ beta are noted here. It is technically a GPC – gas proportional counter. The forms section will have other requirements for alpha/beta like the efficiency and MDCs not MDLs. There would then need to be a 1.6.4.4 for the GPC reporting elements. This issue can be addressed now or as part of the radiological chemistry section supplement.

Response: *Please see response to Comment No. 0-4. Reference to "scintillation detector system" has been changed to "gas flow proportional counting system." References to MDCs have been added to Section 1.6.4 text.*

0-12. Page 2-3, Section 2.7.2, Paragraph 1: A check of the PgmQAP did not show an Appendix I; the last appendix was Appendix G. Please clarify.

Response: *Appendix H had been added to the QAPP Addendum (it contains the laboratory electronic data deliverable requirements), so Appendix I was created for the data validation report templates.*

0-13. Page 2-3, Section 2.7.2, Paragraph 2, Line 5: There should probably be the word *be* between *will* and *addressing* to read ". . . and this will be addressing the NFG assessment . . ."

Response: *The word "addressing" was changed to "address."*

0-14. Page 2-4, Section 2.7.2, Reason Codes: When radiological chemistry is included, there will need to be the rad codes per the DOE document unless you are using adaptations of these codes to the ones you have noted in the LDC format.

Response: *Reason Codes for radiological data (gross alpha and beta) have been added.*

0-15. Page 2-4, Section 2.7.2, Reason Codes: Please explain why there is no specific reason code for negative blanks, which would be a low bias, not a high bias qualifier.

Response: *Per the USEPA National Functional Guidelines (e.g., Section III.E.3.a for ICP-AES), "For any blank (including PB) reported with a negative result, whose value is <(-CRDL), qualify results that are ≥ CRDL as estimated low (J-) and non-detected as estimated (UJ)." The data validators are instructed to follow, for example, per Table 2-8, "Section III of ICP NFG," so the low bias concern is addressed with the "J-" flag. The Reason Codes exist to provide additional information on which QC element(s) is the basis of the flagged data.*

0-16. Page 2-5, Section 2.7.4: The edd format does not cover the rad reporting, specifically for the efficiencies; it is not readily apparent in the field definitions. This issue can be addressed now or as part of the radiological chemistry section supplement.

Response: *EDD format requirements for radiological data (gross alpha and beta) have been added to Section 2.7.4.*

0-17. Table 2-6: Please explain why the table only has state groundwater quality standards and not both state groundwater and surface water standards? Why is there no state standard listed for cadmium or selenium. Please include or explain why the surface water standards and groundwater standards for Cd and Se are absent.

Response: *The cadmium and selenium standards were inadvertently omitted. Table 2-6 has been revised to include the missing cadmium and selenium values. The surface water standards for domestic water supply use (IDAPA 58.01.02) have been added.*

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STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

444 Hospital Way, #300 • Pocatello, Idaho 83201 • (208) 236-6160

C.L. "Butch" Otter, Governor
Toni Hardesty, Director

25 February 2009

Mr. Barry Koch
Special Projects Lead - Mining
P4 Production, LLC
PO Box 816
Soda Springs, ID 83276-0816

Re: *Quality Assurance Project Plan Addendum, Revision 1*, January 2009

Dear Mr. Koch,

The Agencies and Tribes have reviewed the *Quality Assurance Project Plan Addendum, Revision 1*, January 2009, submitted by P4/Monsanto pursuant to Consent Order/Administrative Order on Consent, EPA Docket No. CERCLA-10-2003-0117 (CO/AOC). The referenced document responds to a Notice of Deficiency dated 30 June 2008 and describes changes and updates to the analytical program and field quality control sampling requirements that are necessary to correct deficiencies.

Comments to Revision 1 are attached. The first set of comments are those of Diane Short (Diane Short and Associates) sent to Ruth Siegmund (MWH) via e-mail on 12 February 2009. The Agencies/Tribes provided the remaining comments.

The *Quality Assurance Project Plan Addendum, Revision 1*, January 2009, is considered a deliverable under the CO/AOC, and per Section 9.7 of the CO/AOC, "Within thirty (30) days of P4's receipt of the comment from IDEQ on each draft document, P4 shall amend and submit a revised document to IDEQ that incorporates all comments and corrects all deficiencies identified by IDEQ, unless such comments have been revised or withdrawn in writing." In observance of our review process, I will schedule time on the Monday, 2 March 2009, conference call to answer any questions you might have on the Agency/Tribal comments. Subsequently, the next version of the *Quality Assurance Project Plan Addendum* is due no later than 1 April 2009.

The CO/AOC clearly states that all deliverables shall be submitted in draft form, and are subject to review, comment, and written approval or disapproval by IDEQ. For each draft document, P4/Monsanto shall amend and submit a revised document to IDEQ that incorporates all comments and corrects all deficiencies. Should P4/Monsanto decide not to comply with the comments provided by IDEQ on behalf of all the Agencies and Tribes, discussions to resolve those issues should be initiated. However, after the

Agencies and Tribes have reviewed P4/Monsanto's position and issued instructions to P4/Monsanto to incorporate the original comments, P4/Monsanto must comply or initiate dispute resolution. Future deliverables will be deemed deficient and disapproved should P4/Monsanto fail to comply with the CO/AOC regarding incorporation of Agency/Tribal comments and stipulated penalties may be initiated from the date the revised deliverable was due.

The Agencies and Tribes are anxious to finalize this document. Please let me know if you have any questions. I can be reached at 208-236-6160 or electronically at michael.rowe@deq.idaho.gov.

Sincerely,

Mike Rowe

Mike Rowe
Regional Mining Project Manager

cc: Robert Geddes (P4/Monsanto)
Bill Wright (MWH)
Doug Tanner, Bruce Olenick (IDEQ)
Jeff Jones, Mary Kauffman, (C-TNF)
Jason Sturm (BLM)
Allen Ruberry (IDL)
Kelly Wright (Shoshone-Bannock Tribes)
Sandi Arena (USFWS)
Dave Tomten (EPA)
Bill Wiley (BIA)
File copy/Monsanto/Correspondence

Agencies and Tribes Comments on
Quality Assurance Project Plan Addendum, Revision 1, January 2009
25 February 2009

Diane Short Comments (from 12 Feb 09 e-mail to Ruth Siegmund)

1-A. In general, I think we decided not to put any hold time or preservation criteria into the tables, with the exception of the rad table, which does note sample handling and pH. Is that correct as all of the required language is in the reports?

Reports

IC Method 300

1-1. Hold time: Is nitrite an analyte of concern? If so, the 48 hour HT for nitrite needs to be added.

1-2. LCS: The LCS section of the report and the IC Table note 90 – 110% of limits. The table in the report itself lists an outlier and has limits of 80 – 120% (type is pretty small, so I am not surprised we missed it). The CLP allows wet chem. to have the same limits as metals, so an 80 – 120% window is OK, we just need to be consistent.

ICP and ICPMS 6010 and 6020

1-3. Serial dilution: The text states 50 x the lower limit and then the parenthesis says RL. The lower limit language is correct, the parenthesis need to be MDL or IDL. This needs to be updated in both reports. The next sentence also uses RL and it should be IDL or MDL. Both tables have the correct MDL language.

1-4 Post digest spike: The post digest spike language is not in the reports. It is correct in the Tables. Please consider the following language for insertion into Section VIII. Spike Sample Analysis:

> "A post-digestion spike was analyzed for any spike recovery outlier when the spike x 4 is greater than the sample result. For spike % R < 30% and post digest spike ≥ 75%, data are qualified 'J' or 'UJ'. For spike %R < 30% and post digest was < 75% or not reported, the 'R' matrix effect is verified for undetected data. The matrix spike qualifier 'J' is verified with consideration of significant low bias. No additional qualification is required for the post digest spike as data are already qualified for the matrix spike. If the post digest spike is not correlated (high or low) to the matrix spike, the difference is noted. If a post digest spike is not reported, the serial dilution may be used for further evaluation."

(NOTE: In the original correspondence, the ICPMS report was attached as an example for what needs to be updated for both ICP and ICPMS – both serial and post digest.)

Tables

Ion Chrom Method 300 Table

1-5. See comment to reports for LCS. The table limit is 90 – 110%, CLP limit is 80 – 120%.

ICP and ICPMS

1-6. In the DV qualification column for the MS/MSD, add on last comment = 'J detects' to both tables. This is in reference to the post digest spike. The table included the UJ for non-detects, but not the 'J' for detects. Technically, there is NO additional qualifier for post digest spike, it is just used to finalize the qualifier for the spikes. I have noted that in the language addition to the reports.

CVAA for Mercury

1-7. I took out the post digest language in the MS/MSD DV Qualification column. No post digest spike is required for Hg. It is correctly Not an item in the table and correctly Not included in the reports.

Specific Comments

1-8. Page 1-1, Section 1.0. Add a final paragraph that states that for future tasks task-specific DQOs may necessitate additional addendums.

1-9. Page 1-3, Section 1.6.4. Add a provision that in the future the laboratory should be able to produce a Level 4 package for any batch if needed. This would need to be stated in the laboratory contract and SOW. For Superfund sites generally all data are generated with the Level 4 package as that provides for data of known quality even if not all data will undergo full validation.

1-10. Page 1-3, Section 1.6.4. Identify how the initial 10% samples for Level 4 will be identified.

1-11. Page 1-3, Section 1.6.4. The laboratory should be notified for the sample IDs that will be reported with Level 4 data package after the analyses and not during or before as that information may bias lab performance. Please revise accordingly.

1-12. Page 1-3, Section 1.6.4, Form 1, Bullet 3. Please add language that when it is a "U" value, the lab should report a sample/analyte specific reporting limit for that "U" value.

1-13. Page 2-1, Section 2.3.1. Laboratory specific information should not be included in QAPP as labs may change over time. Please revise accordingly.

1-14. Page 2-1, Section 2.4.2. For analytes where MDLs are higher than criteria please discuss how non-detects will be used in making decisions.

1-15. Page 2-3 Section 2.7.2. Provisions should be made that if problems are noted in the data reviews then more than 10% of the data may need Level 4 validation. Please revise accordingly.

1-16. Page 2-5, Section 2.7.4. It does not appear that Agency/Tribal Comment 0-16 (21 November 2008 letter from Mike Rowe to Barry Koch) was addressed here even though it was said to have been. The original Agency/Tribal comment and P4/Monsanto response are as follows:

> "0-16. Page 2-5, Section 2.7.4: The edd format does not cover the rad reporting, specifically for the efficiencies; it is not readily apparent in the field definitions. This issue can be addressed now or as part of the radiological chemistry section supplement.
>
> Response: *EDD format requirements for radiological data (gross alpha and beta) have been added to Section 2.7.4.*"

Please revise accordingly.

1-17. Table 2-6. For surface water, please include the state standards for Criterion Continuous Concentration (CCC) for Aquatic Life.

Editorial Comments

Page 1-2, Section 1.4.4.2, Line 6. Add a *d* to *incorporate* to read, ". . . will be incorporated into . . ."
Page 1-3, Section 1.6.4, Form 1, Bullet 3, Line 6. Please change *greater than* to *less than* to read, ". . . equal to or less than the MDL are flagged as "U" and . . ."
Page 2-3, Section 2.7.2. The section number is repeated, eliminate the second *2.7.2.*
Table 2-6. For state standards for groundwater: 1) eliminate the negative sign to change manganese to *0.05* and 2) change aluminum to *(0.2)*.

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Response to Agencies and Tribes Comments on
***Quality Assurance Project Plan Addendum, Revision 1*, January 2009**
25 February 2009

Comments received: February 25, 2009
Responses submitted: March 13, 2009

Diane Short Comments (from 12 Feb 09 e-mail to Ruth Siegmund)

1-A. In general, I think we decided not to put any hold time or preservation criteria into the tables, with the exception of the rad table, which does note sample handling and pH. Is that correct as all of the required language is in the reports?

Response: *Holding time requirements are addressed in existing QPP Table 2-2. A statement regarding whether samples were properly preserved and holding time met is provided in each data validation report template.*

1-1. IC Method 300 Report - Hold time: Is nitrite an analyte of concern? If so, the 48 hour HT for nitrite needs to be added.

Response: *The report template example for EPA Method 300 was for chloride only. Event-specific data validation reports will address holding time requirement for the target parameters being validated.*

1-2. IC Method 300 Report - LCS: The LCS section of the report and the IC Table note 90 – 110% of limits. The table in the report itself lists an outlier and has limits of 80 – 120% (type is pretty small, so I am not surprised we missed it). The CLP allows wet chem. to have the same limits as metals, so an 80 – 120% window is OK, we just need to be consistent.

Response: *Table 2-10 and the data validation report template for ion chromatography have been revised to specify CPL limits of 80-120%.*

1-3. ICP and ICPMS 6010 and 6020 Serial dilution: The text states 50 x the lower limit and then the parenthesis says RL. The lower limit language is correct, the parenthesis need to be MDL or IDL. This needs to be updated in both reports. The next sentence also uses RL and it should be IDL or MDL. Both tables have the correct MDL language.

Response: *The data validation report templates for ICP and ICPMS have been revised to state MDL instead of RL.*

1-4 ICP and ICPMS Post digest spike: The post digest spike language is not in the reports. It is correct in the Tables. Please consider the following language for insertion into Section VIII. Spike Sample Analysis:

> "A post-digestion spike was analyzed for any spike recovery outlier when the spike x 4 is greater than the sample result. For spike % R < 30% and post digest spike $\geq$ 75%, data are qualified 'J' or 'UJ'. For spike %R < 30% and post digest was < 75% or not reported, the 'R' matrix effect is verified for undetected data. The matrix spike qualifier 'J' is verified with consideration of significant

low bias. No additional qualification is required for the post digest spike as data are already qualified for the matrix spike. If the post digest spike is not correlated (high or low) to the matrix spike, the difference is noted. If a post digest spike is not reported, the serial dilution may be used for further evaluation."

(NOTE: In the original correspondence, the ICPMS report was attached as an example for what needs to be updated for both ICP and ICPMS – both serial and post digest.)

Response: *The data validation report templates for ICP and ICPMS have been revised as requested, and the last sentence was amended to include "(see following section)" to reference the serial dilution section.*

1-5. Ion Chrom Method 300 Table (Table 2-10) - See comment to reports for LCS. The table limit is 90 – 110%, CLP limit is 80 – 120%.

Response: *Table 2-10 and the data validation report template for ion chromatograph have been revised to specify CPL limits of 80-120%.*

1-6. ICP (Table 2-8) and ICPMS (Table 2-7) - In the DV qualification column for the MS/MSD, add on last comment = 'J detects' to both tables. This is in reference to the post digest spike. The table included the UJ for non-detects, but not the 'J' for detects. Technically, there is NO additional qualifier for post digest spike, it is just used to finalize the qualifier for the spikes. I have noted that in the language addition to the reports.

Response: *Tables 2-8 and 2-7 have been revised as recommended.*

1-7. CVAA for Mercury (Table 2-9) - I took out the post digest language in the MS/MSD DV Qualification column. No post digest spike is required for Hg. It is correctly Not an item in the table and correctly Not included in the reports.

Response: *Table 2-9 has been revised as recommended.*

Specific Comments

1-8. Page 1-1, Section 1.0. Add a final paragraph that states that for future tasks task-specific DQOs may necessitate additional addendums.

Response: *Section 1.0 has been revised to include the following, "For future sampling events, project-specific or sampling event-specific Data Quality Objectives (DQOs) may require stand-alone QAPPs or additional QAPP addenda."*

1-9. Page 1-3, Section 1.6.4. Add a provision that in the future the laboratory should be able to produce a Level 4 package for any batch if needed. This would need to be stated in the laboratory contract and SOW. For Superfund sites generally

all data are generated with the Level 4 package as that provides for data of known quality even if not all data will undergo full validation.

Response: *As stated in the last sentence of the second paragraph in this section, all data packages (and therefore all samples) will be produced with Level 4 deliverables. The second paragraph has been revised to clarify this, as well as concerns specified in Comment Nos. 1-10 and 1-11.*

1-10. Page 1-3, Section 1.6.4. Identify how the initial 10% samples for Level 4 will be identified.

Response: *Please see response to Comment No. 1-9.*

1-11. Page 1-3, Section 1.6.4. The laboratory should be notified for the sample IDs that will be reported with Level 4 data package after the analyses and not during or before as that information may bias lab performance. Please revise accordingly.

Response: *Please see response to Comment No. 1-9.*

1-12. Page 1-3, Section 1.6.4, Form 1, Bullet 3. Please add language that when it is a "U" value, the lab should report a sample/analyte specific reporting limit for that "U" value.

Response: *Text in Bullet 3 has been revised as recommended.*

1-13. Page 2-1, Section 2.3.1. Laboratory specific information should not be included in QAPP as labs may change over time. Please revise accordingly.

Response: *References to use of Microbac have been eliminated.*

1-14. Page 2-1, Section 2.4.2. For analytes where MDLs are higher than criteria please discuss how non-detects will be used in making decisions.

Response: *Section 2.4.2 has been revised because additional screening criteria have been added to Table 2-6. As a result of the additional criteria, cobalt, copper, and silver will be analyzed by ICPMS and the RLs and MDLs for those parameters are lowered. Beryllium and molybdenum will still be analyzed by ICP, but their RLs and MDLs were also lowered. Text was added to address comment.*

1-15. Page 2-3 Section 2.7.2. Provisions should be made that if problems are noted in the data reviews then more than 10% of the data may need Level 4 validation. Please revise accordingly.

Response: *The second to last sentence of the second paragraph in Section 2.7.2 has been revised as follows: "If a problem is discovered during the Level 4 validation that was not addressed in the Level 3 validation, then appropriate corrective action will be implemented for all data generated for the sampling event, including evaluation of this*

specific problem in all data packages." Additionally, second paragraph in Section 1.6.4 has been revised to reference Section 2.7.2.

1-16. Page 2-5, Section 2.7.4. It does not appear that Agency/Tribal Comment 0-16 (21 November 2008 letter from Mike Rowe to Barry Koch) was addressed here even though it was said to have been. The original Agency/Tribal comment and P4/Monsanto response are as follows:

> "0-16. Page 2-5, Section 2.7.4: The edd format does not cover the rad reporting, specifically for the efficiencies; it is not readily apparent in the field definitions. This issue can be addressed now or as part of the radiological chemistry section supplement.
>
> Response: *EDD format requirements for radiological data (gross alpha and beta) have been added to Section 2.7.4.*"

Please revise accordingly.

Response: *The response to original A/T specific comment 0-16 on the Draft Rev. 1 document incorrectly referenced that the revision was made to Section 2.7.4. The actual revision was performed in Section 1.6.4.4.*

1-17. Table 2-6. For surface water, please include the state standards for Criterion Continuous Concentration (CCC) for Aquatic Life.

Response: *Table 2-6 has been revised to include State of Idaho Surface Water and Aquatic Life (acute and chronic) criteria; IDEQ Area Wide Risk Management Plan removal and monitoring levels for groundwater and surface water; and National Standards for Aquatic Life (acute and chronic).*

Editorial Comments

E-1 Page 1-2, Section 1.4.4.2, Line 6. Add a *d* to *incorporate* to read, ". . . will be incorporated into . . ."
E-2 Page 1-3, Section 1.6.4, Form 1, Bullet 3, Line 6. Please change *greater than* to *less than* to read, ". . . equal to or less than the MDL are flagged as "U" and . . ."
E-3 Page 2-3, Section 2.7.2. The section number is repeated, eliminate the second *2.7.2*.
E-4 Table 2-6. For state standards for groundwater: 1) eliminate the negative sign to change manganese to *0.05* and 2) change aluminum to *(0.2)*.

Response: *These editorial corrections have been incorporated.*

STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

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C.L. "Butch" Otter, Governor
Toni Hardesty, Director

23 April 2009

Mr. Barry Koch
Special Projects Lead - Mining
P4 Production, LLC
PO Box 816
Soda Springs, ID 83276-0816

Re: Agency/Tribal approval of *Quality Assurance Project Plan Addendum, Program Quality Assurance Plan, Revision 2,* March 2009

Dear Mr. Koch,

The Agencies and Tribes have reviewed *Quality Assurance Project Plan Addendum, Program Quality Assurance Plan, Revision 2,* March 2009 (*QAPP Addendum*), submitted by P4/Monsanto pursuant to Consent Order/Administrative Order on Consent, EPA Docket No. CERCLA-10-2003-0117 (CO/AOC). Follow-up discussions since submittal of Revision 2 of the document have entailed several issues. Some of these issues were resolved while others need to be incorporated into the final *QAPP Addendum* or future task-specific QAPP addenda.

Those issues which have been satisfactorily resolved include the following.

- Mike Rowe's editorial comments submitted to Ruth Siegmund in a 6 April 2009 e-mail. Note that Table 2-6 is fine as submitted in Revision 2.
- Language in Section 1.4.2 as to implementation of the DQO process on a task specific basis will remain in the document as stated in a 10 April 2009 e-mail from Mike Rowe to Ruth Siegmund.
- Resolution of the comment (#2) made by Diane Short in a 23 March 2009 e-mail to Ruth Siegmund and Mike Rowe. The resolving response to this comment was contained in a 13 April 2009 e-mail from Ruth Siegmund to Mike Rowe.
- The current LDC radiochemical data validation SOP appears to be appropriate for project use as a universal/generic template and therefore may be incorporated into the Project QAPP as such.

In the weekly P4/Monsanto, MWH, Agencies, and Tribes conference call of 20 April 2009, we discussed recent guidance from EPA on labeling future validated laboratory analytical data. It was agreed that the "general essence" of the guidance will be incorporated into the *QAPP Addendum*.

As to future work, additional task-specific QAPP addenda as needed will identify and adequately describe the methods and lab control standards (LCS) to be used for any nonstandard matrix analyses, such as biota. Specifically, to provide for data of known quality where nonstandard methods are used, the task-specific QAPP needs to address the following:

- The methods to be used by providing standard operating procedures;
- Method validation studies; and,
- QC controls such as SRMs to be implemented during the analyses.

As the above is highly specialized, the project team will need to obtain most of this information from the specific lab and provide for technical review to assess the adequacy and ensure generation of data of known quality. Note that the current P4/Monsanto data validation templates of the *QAPP Addendum* have two sections that address the method information and LCS. Nonstandard matrix issues can be addressed in these two sections of the template.

Revision 2 of the *Quality Assurance Project Plan Addendum, Program Quality Assurance Plan* is hereby approved with inclusion of editorial comments and EPA guidance on labeling as discussed above and receipt of a "clean" copy of the entire document. Language will need to be included indicating that this is the final approved version of the *QAPP Addendum*. We will also need a new pdf file of the final document. Please let me know if you have any questions.

Sincerely,

Mike Rowe

Mike Rowe
Regional Mining Project Manager

cc: Robert Geddes (P4/Monsanto)
Cary Foulk (MWH)
Doug Tanner, Bruce Olenick (IDEQ)
Jeff Jones, Mary Kauffman, (C-TNF)
Jason Sturm (BLM)
Allen Ruberry (IDL)
Kelly Wright (Shoshone-Bannock Tribes)
Sandi Arena (USFWS)
Dave Tomten (EPA)
Bill Wiley (BIA)
File copy/Monsanto/Correspondence